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COURSE IN GENERAL TACTICS AND STAFF WORK

GENERAL TACTICS

BY COLONEL LEMOINE
Professor of the Course

December, 1922

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The Course in General Tactics has as object the study of the command of the Division and the Corps under the principle conditions of warfare.

The instruction given is based upon the regulations at present in effect and, in particular, upon "Provisional Instructions for the Tactical Use of Large Units" (L'Instruction provisoire sur l'Emploi tactique des Grandes Unités). It comprises a practical part and an instructional part.

The exercises and the practical problems constitute the essential part of the course. During the first year they concern the Division, during the second year, the Corps.

The instructional course has been drawn up so as to parallel the practical problems as closely as possible. This consideration explains the importance attached to questions of method and also the development given to certain points, which the experiences of the first years of instruction prior to the war showed the necessity of particularly stressing.

The first two parts of the present course correspond to the conferences of the first year; the third part, to the conferences of the second year.

(NOTE - References to the first and second year are to the respective years of the two year course of the Ecole Superieure de Guerre - Tr.)

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COURSE IN GENERAL TACTICS AND STAFF WORK.

PART ONE

THE ELEMENTS

CHAPTER I

THE ELEMENTS OF THE DECISION OF THE COMMANDER.

In war, "the principal role of the commander is to make decisions (1)". Each of his decisions may last for a more or less limited period of time, depending upon the rapidity of change in the different elements of the situation. But whether the succession of decisions in the course of one action be rapid or slow, nothing is changed in the nature and mechanism of the decision considered by itself. Each time the process followed will always be the same.

We shall try to see of what it consists.

Upon what is the decision based?

We have the universally accepted aphorism that in war the decisions to be made vary according to circumstances.

Consequently a really objective study of tactical questions should seek to establish the relations that exist between the circumstances, on one hand, and the dispositions to be taken, on the other hand.

At first sight the circumstances seem so numerous, so intertwined, that it appears impossible to succeed in classifying them. And this would doubtless be a difficult task if we were obliged to create everything ourselves. But here, however, we are not in a virgin field; the regulations and the works of numerous military writers have cleared the ground and marked out the main routes. We have only to continue the already commenced movement.

In the attempt to adapt dispositions to circumstances, one sometimes first seeks to solve a general case; then one indicates, for a certain number of special cases, the appropriate modifications to be applied to the solution of the general case.

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(1) Instruction provisoire sur l'Emploi tactique des Grandes Unites, No 64.

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Such a method of presenting things requires special precautions.

Indeed, for a given mission, the tactical circumstances may vary in such degree that a solution suitable for a determinate set is not at all suitable for a set that is perceptibly different. Therefore, chaining down the mind to a type-solution would have its disadvantages; it would result in placing the mind in leading strings, thereby risking the possibility of quite wrong actions.

In all things, of course, a point of departure is necessary and one is indeed obliged to present and solve questions successively. We simply wish to warn the reader against any idea of exaggerated generalization, in pointing out, from this time on, that the initial cases with which we commence are not, and cannot be, "general cases."

If we turn back to the regulations on the command of large units we find in them that the principal given quantities that serve as a base for the decision of the commander are:

- the mission assigned by higher authority;
- the forces to put at work; strength and value of the troops, character and aptitudes of the commanders of subordinate units, material means that the commander has at his disposal;
- the situation with respect to the enemy;
- the situation with respect to the nearest large units;
- the ensemble of other circumstances, (nature of the terrain, state of communications, climate, seasons, etc.)

These given quantities are what we call the great variables of a situation. Each one of them merits deep study.

We shall first examine them successively, with some details. Then we shall try to indicate how the commander should make for himself a picture of the ensemble of the situation and from it, pick out the main lines of which he will have need in making his decision. The study of a situation would indeed be insufficient if it were limited to a more or less incoherent enumeration of the observed characteristics of that situation. After having brought out these characteristics, it is necessary to attempt to group them and to boil them down to a form useful in making the decision.

For the purpose of this study it appears to us to be advisable to classify into two distinct groups the elements we have just enumerated.

To the first group belong:

The special mission of the unit under consideration.

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11-25-24

The mission and the situation of neighboring units, for the mission given to a unit is often cleared up, and always influenced, by the mission given to neighboring units.

The second group will comprise:

The forces to put at work (means of action).

The situation with respect to the enemy.

The terrain and atmospheric conditions.

It is to this second group that we more particularly give the name of "situation".

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CHAPTER II.

THE MISSION.

The mission received from higher authority constitutes the first element of the decision of the commander.

The mission received governs absolutely; all efforts must be made to execute it. Therefore it is important to commence by thoroughly understanding the mission, for experience shows that many errors of execution arise from the fact that the mission has not been thoroughly understood, if, indeed, it has not been quite lost from sight.

The mission habitually fixes:

1st - The attitude to be observed toward the enemy: advance toward him, wait for him or fall back; attack him or defend oneself.

2d - Concrete given quantities, specifying the action to be taken (limits of time and limits of space): reach such a point in so much time; hold such a time upon such a position; act in such a direction; resist upon such a front; etc ..... These concrete given quantities must be noted with the greatest care; the unit to which one belongs is in reality part of a whole, and the limits fixed for its action cannot be transgressed without danger to the ensemble of the operation.

3d - The role of the unit in the ensemble of the maneuver.

However precise may be the mission, it cannot, however, foresee all possible eventualities. One may find oneself either confronted by new conditions or simply in face of a more rapid or slower development of operations than had been anticipated. In the course of an operation, consequently, it may occur that the initial mission no longer suffices to orient the decisions to be made. The action, however, cannot be stopped and in order that it continue, it is necessary that the subordinate interpret or complete, himself, the mission that was given him. Indeed, it is not always possible to ask for, and await, a fresh intervention by the higher echelon.

In this case, it is by turning back to his role in tho ensemble of the maneuver that the commander may succeed in solving the new problem set him.

Consequently it is desirable, in the study of the special mission of a given unit, to connect with it the mission of the entire higher unit and the special missions of neighboring units.

As regards these last, study should, above all, bear upon the reciprocal interdependences of the various missions. It may be that each one is to act in its zone without concerning itself about its neighbors; as we sometimes say: without regard to keeping on the same line. But this simple conception is not always possible. In

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reality, it so happens that the progress of neighboring units is mutually interdependent and that the actions of one of them must be prior to or subsequent to those of the others.

With improvements in fire arms and the growing importance of the terrain factor, the necessity of these cadenced actions becomes more and more frequent.

Consequently we have there another point that should be well brought out by study of the mission.

4th - Detailed orders relative to the execution of the mission.

In studying the decision, we shall see that the ideal to be sought would be to give each subordinate an objective, leaving to him complete initiative as to the measures to be taken to arrive at the desired result. But that is a theoretical conception which, in practice, cannot be followed out regularly.

Sometimes the units taking part in the same action are relatively independent of one another, sometimes, on the contrary, their several actions are closely intertwined. The command, consequently, should, in each particular case, fix the degree of initiative that it wishes to leave to its subordinates.

The mission, then, may be more or less broad, more or less precise; it leaves more or less initiative to the executant; therefore it is the duty of the latter, in each special case, to examine into the amount of initiative really left to him in the choice of measures of execution.

To sum up, the essential points that the study of the mission should bring out are:

the attitude to be observed as regards the enemy;

the concrete limits of the action;

the role of the unit with respect to neighboring troops;

and finally, restrictions relative to the execution.

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CHAPTER III

THE MEANS OF ACTION

An exact appreciation of the means at one's disposal is the first element of the decision.

This appreciation does not consist of a simple enumeration.

It is easily to be seen that if a Division is to attack on a front of 6,600 yards, its relative force is not the same as it would be were it to attack on a front of 1650 yards, although its absolute force has not changed.

In order to proceed methodically, it is therefore necessary to establish a relation between the organic means at the disposal of a unit and the extent of front upon which it may be called to act. So, without distinction, we employ the expression "means of action" and "front of action" to characterize the force of a unit.

This first task completed, it is desirable, in addition, to take into consideration two factors special to each situation:

- the difference that exists between the organic means of the unit considered and those at its disposition in reality. If the organic unit has been reinforced, if additional means have been placed at its disposition, it becomes either "capable" of a greater front or able to make a stronger effort on the same front. The reasoning would be inverse were the means of the Division diminished.

- the degree of preparation for combat attained by these various means. This preparation requires time and, other things being equal, the degree of advancement of this preparation is a function of the time at one's disposal. We must consequently acquire knowledge of the time necessary for gathering these means together and putting them at work.

Appreciation of the "worth" of various means naturally is of great importance, when one is faced by a concrete problem. Consequently we should profit by all opportunities to practice ourselves at this and to compare our own appreciations with those of others.

In this way, before drawing conclusions from historic examples, we shall do well to make a deep study of the means put at work, as well as the other elements of the situation. We shall thus avoid hasty generalizations that would render the study more dangerous than useful.

The Course in General Tactics, primarily, takes up study of only the large units, the Division and the Corps.

The Corps having a variable number of divisions, and the division having, on the contrary, a nearly fixed composition, it is the division that we must take as a unit in our calculations.

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The means of the division are the sum of the means of the different arms composing it. This question is studied in detail in those courses of the School dealing with the various arms. However, it is believed that it will be useful to mention here, without discussion, the few basic quantities which we shall have occasion to use most frequently.

I. INFANTRY AND TANKS.

INFANTRY FIRE POWER

We may take the battalion as a unit for our calculations.

The most powerful fire element of the battalion is its machine gun company.

Employed as a whole, it, at any given moment, interdicts all movement on a front of 440 to 550 yards. Under the same conditions, it can "neutralize" the fire of the enemy on a front of 220 to 275 yards.

It can develop a sheaf of 2,000 shots per minute and, with the resources of its combat train, keep up this fire for two hours without interruption.

The battalion also has 30 auto-rifles which, at the rate of 60 shots per minute, can develop an additional 1,800 shots per minute.

The fire of the auto-rifle is not to be compared with that of the machine gun, but we may, however, admit that the present day battalion can develop an extremely powerful fire on a front of 880 to 1,100 yards.

When it is question of covering a front, the infantry special weapons cannot be considered in the calculation. They are used by the infantry only to solve small problems of detail.

The output of the fire is practically dependent on the visibility of the objective.

VULNERABILITY OF INFANTRY

Infantry is vulnerable to a considerable extent.

Machine gun barrages cannot be crossed. Consequently any infantry that finds itself in the field of fire of an enemy machine gun in action, cannot move.

Under its fire, infantry that can be seen, or infantry that is not sheltered, is quickly paralyzed. It can escape destruction only by deep echelonning in depth.

We can count reasonably on an infantry advance only if we have reduced the adversary to silence, or, at least, put into action the means necessary to obtain the result. This is the meaning that we must give to the formula "gain superiority of fire."

SPEED OF MOVEMENT OF INFANTRY

In varied terrain, the average rate of movement of infantry is not greater than 2,200 yards per hour.

It quickly falls to 1,100 yards per hour if the infantry is obliged to use avenues of approach (paths, special routes--Tr).

In critical periods, behind a rolling barrage, infantry can make 1,100 yards in 30 to 50 minutes. It cannot maintain this speed long.

TANKS.

The tanks fight in close liaison with the infantry.

One section of tanks, normally, acts on a front of 220 yards.

However, one section may suffice to support a battalion acting on a front of 440 yards.

The tank company habitually keeps one section in reserve.

If the combat front of a battalion reaches 660 to 880 yards, we would support it by two sections in front line, i.e., give it an entire company.

The light tank advances at the rate of 4,400 to 5,500 yards per hour. It has only a short radius of action and we are under the necessity of bringing it, on special truck, to within five miles of its base of departure.

One tank unit can fight during two days. It is then necessary to give it two days rest in order to allow it to reorganize.

The great vulnerability of tanks demands that their action be supported and covered by the artillery; moreover the possibility and the relative frequency of breakdowns render doubtful the action of these machines and forbid any action independent of the infantry.

Present day tendencies are toward the use of large numbers of tanks on wide fronts. As a corollary of this, tank regiments would become Army or General Headquarters troops and would be put at the disposition of corps only in certain zones and under certain special conditions. It is only exceptionally, therefore, that the infantry can count upon the support of tanks.

II. ARTILLERY.

We may take either the battery or the battalion of artillery as the unit of calculation.

We shall not give the nomenclature of the fires that the artillery can execute. They are to be found in the Regulations and in the artillery course. For our purposes it suffices to note the density of these fires and from this point of view we can group them into five principal categories, to wit:

- fires for destruction proper;
- fires in direct support and protective fires;
- counter preparation fires and stopping fires (tirs d'arrêt);
- counterbattery fires (destruction or neutralization);
- interdiction and harassing fires.

1st - Fires for destruction proper

(Figures vary according to the types of shell and according to the distance)

Objectives	75	155
Shelters (not concrete)	100 rounds	60 to 125 rounds
Places	---	4 rounds per 110 yards square
Breach of 27 yards in wire 33 yards deep	600 to 1,200 rounds	200 to 800 rounds
Breach in a trench:		
1st-perpendicular fire	---	3 to 8 rounds per linear yard
2d-oblique or enfilade fire	10 rounds per linear yard	half of figures given above

2d - Fires in direct support and protective fires.

(a) Fires in direct support. - A dense and deep rolling barrage, as prescribed in the regulations, requires 1 battalion of light artillery on 220 yards of front (2 batteries using percussion fire, each on 110 yards, 1 battery uding time fuse fire on 220 yards), say a total of 5 battalions to 1,100 yards.

(b) Protective fires. - For the heavy artillery usually employed in protective fires, the maximum admissible density would appear to be 1 battalion per 330 yards, or a little more than three battalions to 1,100 yards; the minimum density should be about one-half the preceding: 1 battalion per 660 yards, nearly 2 battalions per 1,100 yards.

3d - Counter preparation fires and stopping fires.

1 light battery should habitually protect a front of~~2~~220 yards, provided the rate is 8 rounds per piece per minute, say, for 1,100 yards, a little less than 2 battalions firing upon a continuous line. Above 330 yards of front per battery, the fire loses all efficacy.

4th - Counter battery fires

(a) Destruction requires, depending on the distance (assuming solid construction):

- 500 to 800 rounds of 75,
- 300 to 500 rounds of 155 (howitzer or gun)

This consumption, for example, would represent the fire of a battalion of 75's kept up from 12 to 18 minutes at the normal rate, or, the fire of a battalion of 155 howitzers, at the normal rate, kept up from 40 minutes to about 1 hour.

(b) Neutralization can be effected by 1 section against 1 enemy battery, say 1 battalion for six enemy batteries.

5th - Interdiction and harassing fires.

Interdiction requires from 100 to 200 rounds per hour for each objective.

The requirements for harassing fires vary widely. The maximum would appear to be 100 to 150 rounds per area 110 yards square for the 75 and about one-half that amount for the 155.

All these mentioned fires demand a considerable expenditure of ammunition which, during an active period, may easily attain 120 rounds per hour for the 75 and 40 to 45 rounds per hour for the 155; that is to say, nearly the half of the normal organic supply of the Division and of the Corps.

RANGES OF PIECES - SAFETY ZONES.

In the calculations of the command and the staff, it is wise to not count on the theoretical maximum range of a given type of gun, particularly on account of the wearing out of the pieces and eventual atmospheric changes. The maximum range, in practice, should be reduced by about one-tenth.

Also, fires at distances close to the maximum range wear out the materiel and they should be reduced to the indispensable.

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From another point of view -- that of the safety of troops -- it is highly important to avoid, as much as possible, fires at great distances, when the fires are to fall in the neighborhood of (our) infantry. A safety zone is necessary and the depth of this safety zone is a function of the caliber, the projectile, the terrain, the distance and the degree of shelter available for the infantry. Thus, in the case of troops advancing over open ground, it is preferable not to execute 75 mm rolling barrages at distances greater than 5,500 yards; with medium and heavy artillery the mean point of impact should be constantly kept at least 440 yards in front of the infantry that is being supported.

MOVING INTO POSITION OF THE ARTILLERY.

The length of movement into position of the artillery depends principally on the time necessary for organizing observation and communications, for the preparing of fires and, above all, for the bringing up of ammunition.

As regards observation and communications, this time varies according to the degree of perfection of the means to be employed. We may figure on, at the minimum:

Communication from a battalion to a nearby observation post: 1 hour per unit distance of 1,100 yards between the battery and the observation post.

Installation of antenna: ½ hour to 1 hour.

Organization of a terrestrial observation system for a corps artillery: 10 to 18 hours.

Organization of sound-ranging system: 1½ to 3 days.

Command communications of a Division Artillery: 4 to 8 hours.

Command communications of a mass of artillery: 12 to 24 hours.

By these figures, we see that the organization of perfected systems of observation and command is possible only in periods of relative stability.

NATURE OF ARTILLERY FIRES

In the present state of the conditions surrounding the use of artillery materiel it may be said that the fires which the artillery can execute most easily are fires upon a zone of a certain width and a certain depth. It is this sort of fires that best utilizes the properties of the arm. Fires upon an exact point are difficult of execution and nearly always uncertain. They are possible only under special conditions.

Moreover, when the artillery means are insufficient to act simultaneously along all the points of a front of action-- a frequent case as we shall see later -- rapid changes in the fires of artillery are possible only when the command is highly centralized.

It is desirable to take these two necessities into consideration in the solution of problems that require combining the action of the artillery with that of the infantry.

III. CAVALRY

The organic composition of the Division and the Corps comprises only a very small amount of cavalry.

The fire power of a 4-squadron regiment of cavalry may be considered as equivalent to that of a battalion of infantry. But the mobility of the cavalry is 4 to 5 times greater than that of the infantry.

In using these two properties to the best effect, we may unhesitatingly give combat missions to the corps cavalry on condition that these missions be of not long duration and that the cavalry may be relieved, on the spot, by infantry, before the combat has passed into a decisive phase.

The use of cavalry in close liaison with the infantry is particularly indicated at the beginning and ending of combat (gaining contact, engagement, exploitation and pursuit). In the course of the combat itself, it appears preferable to utilize it as a mobile reserve of fire.

On average terrain, one squadron may easily explore a front of 4,400 yards, place a curtain of fire on a front of 1,100 yards and put up resistance of a certain duration on a front of 550 yards.

IV. AIR SERVICE

The air service of the corps (squadron of airplanes, balloons) is exclusively observation air service.

Balloon observation is permanent except during the time necessary to effect changes of position.

An airplane can remain in the air only 2 to 2½ hours. Its observation mission over the lines may last about 1½ to 2 hours. One airplane cannot be called upon for more than two missions per day. Taking accidents and breakdowns into consideration a squadron of ten airplanes can furnish fifteen missions per day; but such an effort cannot be kept up for very long.

We know that the reconnaissance missions may be classed as:

Sight reconnaissance;
Photographs;
Observation of artillery fires;
Accompaniment of the infantry.

In order to avoid waste of effort, we should ask of the airplane only that which we cannot get from use of the balloon.

The air service acts according to programmes prepared in advance and covering, as much as possible, an entire day. The executing of an "unforeseen" mission requires a delay of from 2 to 3 hours and even more, if the mission must be protected.

Corps air service executes reconnaissances to only a small depth: 6,600 to 11,000 yards, depending on the situation. More distant reconnaissances are made by the army air service. The army order fixes, each day, (and oftener if it be necessary) the line of demarcation between the zones of exploration of the two air services.

Aerial observation can be well performed only if it is protected by pursuit aviation. This protection cannot be so arranged as to be permanent and the command must take counsel with itself and decide upon the periods of the day during which it desires to have mastery of the air. In general, the command cannot count upon such mastery of the air for more than two periods of 1½ to 2 hours in the course of a day. The remainder of the time it must realize that its aerial observation is fragile and may be instantaneously reduced to zero by an incursion of the enemy pursuit air service.

V. ENGINEERS

The essential mission of the engineers is the making of communications.

It also aids in works on the battlefield.

It is to be employed in rear of the infantry and its units should not be broken up.

The specialization of the engineer units and their small strength render it undesirable to break them up to place them at the disposal of the infantry, except for well determined tasks.

During the war the use of engineers in attacks, in front line with the infantry, for the destruction of accessory defenses, for example, has never given results in proportion to the losses suffered. Therefore we should not rely upon this method of employing them.

For the details concerning improving of communications or those of field fortification on the battlefield, we can turn to the course taking up the engineer arm and to Notes Pratiques sur le Service d'Etat-Major en Campagne.

VI. THE DIVISION AND THE CORPS

We refer to the Course in Staff-Work for information concerning the organization of these two large units. Here we simply wish to stress two essential differences between the Division and the Corps: difference in power and difference in action.

Difference in power. -- On account of its restricted means, the Division, as an entity, can only carry on combat as a part of a more powerful action. Following out the same line of thought, it is difficult for a Division to accomplish two missions at the same time, i.e., to act in two directions. To find a unit really capable of carrying on an operation from start to finish, we must go up to the Corps.

Difference in action. -- Setting aside the Corps artillery, the Corps is composed of similar, homogeneous units -- divisions. The Corps employs them by juxtaposing their zones of action. Of course, the Corps combines directions and zones of action so as to bring about the maneuver it has decided upon, but the Corps order may limit itself to general lines and it is not obliged to enter into details of the parcelling out of the means within the subordinate units.

The situation of the Division is quite different. The Division commander does not command similar units -- he commands different arms. These arms are to work in close combination and often on the same zone of terrain. Their action is not juxtaposed as is that of the Divisions in the Corps; it is, in a measure, superposed. Consequently the Division commander cannot refrain from intervening in the details of the parcelling out of the means of his subordinates, if he intends that the parcelling out be adequate for his plan of maneuver. Neither the Divisional Infantry Commander (Commander of the three infantry regiments of the division--Tr.) nor the Divisional Artillery Commander of a Division can enjoy autonomy comparable to that of the Division commander in a Corps.

It frequently happens that the Division and the Corps receive additional means for either a part, or the whole, of an operation.

As a rule, the Division is not reinforced in Infantry. The additional means given it are artillery and tanks. The Division can easily use a quantity of artillery double or even triple that of its organic means. When artillery reinforcements are of some size, putting artillery into action can only be accomplished at the cost of a quite long period of time.

Organically, the Corps comprises two divisions, but with two divisions it is difficult for it to maneuver. The corps, moreover, is so arranged as to easily take care of three or four divisions.

In important operations, in addition to tanks, it habitually receives reinforcements of light artillery (75 horse drawn or porte), of howitzers and heavy artillery - which may reach, in each of these categories, the amount of one, two or even three regiments.

The corps habitually reserves for itself the use of the artillery necessary for counter-battery and for distant fires (in particular, the heavy artillery) and divides up the remainder among the divisions in line.

As concerns the Division and the Corps, the relations to be established between effectives and fronts will be studied in Part Two.

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CHAPTER IV

THE TERRAIN

The terrain is an important element of the situation and, at the same time, it is one of the easiest to inform oneself on.

The object of its study is to bring out how it favors or fetters the power of fire and also how it lends itself to the usual methods of advance and of combat of the different arms. It is from this special and precise point of view that we must examine it. We are not obliged to make a geographical or a topographical dissertation -- though these would be useful to us -- we have to see how the terrain will be useful to us or how it will impede our progress.

Every time that we change our armament or our methods of combat, the manner of studying the terrain must be modified.

On this score, the recent war has brought out many new facts, among which the following are of special importance as concerns the terrain:

Generalization of the use of the machine gun, a flat-trajectory arm firing up to 3,300 yards (farther than the cannon of 1870) and whose barrages are impassable, less passable, at all events, than those of artillery. The combatant of 1922 can no longer see the terrain as did the combatant of 1812, nor even as did the combatant of 1870.

The increase in the depth of the field of battle which at present is several thousand yards whereas formerly it was reduced, at least as regards the infantry, to several hundred yards. A thorough study of the terrain is thus forced on echelons which formerly could pass it by.

The methods of study of the terrain must therefore change progressively and it is indispensable to keep them constantly up to date.

THE TERRAIN AND INFANTRY FIRE.

Formerly the infantry fought in linear formation and the combat had a tendency to localize itself around natural defensive points (dominating points, villages, small woods, etc). In consequence, study of the terrain had as object the inventory of natural defensive points by noting their particular properties (fields of fire, cover, resistance they could make against being surrounded, interior resistance of which they were capable) and the examination of the characteristic lines of the terrain (military crest, topographical crest, reverse slope, valley) in noting their fields of fire and the defilade from possible observations of the enemy artillery.

This method of study has not lost all its value. It remains the proper method in the case in which the nature of the terrain or else the weakness of effectives obliges the infantry to make use of linear formations. But it is no longer sufficient because two new facts have arisen: the infantry spreads itself out in width and in depth and it makes constant use of flanking fires.

This dispersion and these crossings of fire are not possible on all sorts of terrain. Cover, groups of houses and woods, the undulations of the ground and the dead angles resultant therefrom form just so many obstacles which prevent complete use of the automatic arm. Their presence determines a partitioning of the terrain into compartments. In the interior of each one of the enclosures thus created crossings of fires are possible; but, as regards one another, these compartments are more or less mutually isolated. Considered individually, each compartment is more or less large, depending on the accidents of the terrain that determine it. Now, this size has a considerable influence on the method of attack, for we cannot attack only a part of a given compartment; the attack must embrace the entire compartment, or, at least, neutralize it in entirety. In a given terrain, there is thus a minimum front of attack and consequently a minimum strength of means to be placed in line to execute, support and protect this attack.

Limitations on the possibility of flanking fires imposed by the terrain also apply to the possibilities of echeloning in depth.

The echeloning in depth of the infantry has as primary object the diminishing of its vulnerability; but this is void of inconvenience only if all of its elements can take part in one and the same area of fire. Now it often happens that the terrain does not permit the desired echeloning, and forces the infantry to employ more or less linear formations--a fact that the defender and the attacker are obliged to take into consideration.

Consequently, the compartments of which we have just spoken have a limit in the sense of depth as well as in width and examination of the terrain should bring out these limits.

For the time being, we will limit ourselves to these few considerations. We shall return to a more detailed study of this question in studying the methods of attack and of defense.

THE TERRAIN AND ARTILLERY FIRES

At first sight one might believe that with the improvements of the materiel and methods of fire of the artillery, the effects of its fire would be independent of the forms of the terrain. With its curved trajectories, the fire of the artillery can reach everywhere; with its observation posts and, in particular, with aerial observation, it can see everything; with its prepared fires, it can rapidly strike everywhere;

Theoretically, this is true; but in practice the conditions necessary for these results can neither be brought about always nor everywhere.

To begin with, a large part of the artillery can deliver only flat trajectory fire and for this class of artillery dead angles crop up. Also, to have observed the progress of a rolling barrage on alternately ascending and descending slopes is sufficient to note that the fire is much more dense and regular on the first than on the latter.

Aerial observation, moreover, is intermittent and it is sometimes even impossible. Consequently the action of the artillery when it is to work in close liaison with the infantry is always easier and more certain in those portions of the terrain that are seen well by terrestrial observation posts.

As a matter of fact, the descending slopes that diminish or annul the effects of flat trajectory fire are habitually included in the zones that cannot be seen from terrestrial observation posts. Therefore, by searching for and marking on the map the zones that are visible -- and those that are invisible -- by terrestrial observation, we shall acquire a sufficiently approximate idea of the influence of the terrain on artillery fire.

THE TERRAIN AND TANKS.

Tanks are means that, primarily, act by movement. Therefore their use is subject to conditions that will be studied later. (The Terrain and movement).

THE TERRAIN AND FORTIFICATION

Fortification modifies neither the general form nor the properties of the terrain, but it enables us to make the maximum use of them. It modifies superficial accidents of the ground, cover and obstacles, does away with those that are in the way, and strengthens or creates such as are useful: belts of barbed wire, shell-proof shelters, communication trenches and trenches.

At the same time, organization of fires, of communications and of methods of observation may be thoroughly carried out and attain such a degree of improvement as to make possible fire combinations of the most flexible and startling sort, thereby partly remedying defects in observation.

Fortification, however, cannot change the forms of the ground. It diminishes the vulnerability of the defender and increases the vulnerability of the attacker. But, as regards terrestrial observation, field of fire, flanking fires, the terrain has the same influence as if it were not fortified.

Consequently, neither in defense nor in attack should the fact of fortification cause us to lose sight of the forms of the ground, and the study of terrain should precede study of its fortifying.

From this point of view it is perhaps well to note that using nothing but "plans directeurs" is dangerous when getting up an operation. The very large quantity of signs that we are obliged to place upon them results in rendering the map illegible and we run the risk of great and costly errors if we do not take care, in the first place, to preserve the real appearance of the map.

THE TERRAIN AND MOVEMENT.

We must distinguish between movements in rear of the firing line and the movements of the firing line itself.

In movements in rear of the firing line, two things are to be considered: the practicability or ease of movement "across country" and defilade from observation.

Formerly, defilade from terrestrial observation was sufficient. Today we must concern ourselves with defilade from aerial observation: fixed observation, balloons; intermittent observation, airplanes. For movements we wish to conceal from the enemy, this makes us seek either natural cover, woods, accidents of the ground, etc. or special atmospheric conditions such as night or fog.

We must not forget that routes, and halts, in low ground within range of enemy artillery, may be rendered dangerous by gas if the movement has been gotten wind of by the enemy and this must be considered in classifying routes.

As regards movement of the first echelons, there can be no question of utilizing routes - at least for the greater part of the elements in line. These elements are obliged to sweep the greater part of all the terrain. We should remember only that their progress is particularly difficult across the zones under observation of the enemy terrestrial observation posts, where the combinations of enemy artillery and infantry fires are made under the best possible conditions. Speaking practically, we may state that the necessity of obtaining superiority of fire with means that are always limited, reduces zones favoring progress of the infantry to such as are under good terrestrial observation by the supporting artillery. Everywhere else the risks are very high unless we can put extremely powerful means into line.

Therefore, on a given expanse of terrain, there are zones favorable to movement and zones unfavorable to movement. Study of the terrain should bring them to light.

METHODS TO BE FOLLOWED IN STUDYING THE TERRAIN.

If we sum up the conclusions of the preceding paragraphs, we may conclude that study of the terrain should bring out:

-- the defensive points and the principal lines of the terrain;
-- the enclosures or compartments in the interior of which crossings of fire are possible;
-- the zones that are seen, and unseen, from terrestrial observation points;
-- the routes giving access to the battlefield.

Here we again find the three factors set out in relief by our regulations: observation, flankings, communications. Above all, we stress the necessity of considering these different points not only by themselves but still more as regards their consequences.

This being said, the study of a given terrain, seems to us to demand, first, a general study and second, a special study.

The general study will have as object the noting of:

1st - The general aspect of the terrain, which we can place, more or less exactly, in one of the following categories:

Terrain	General characteristics	Tactical characteristics
Uncovered	Large undulations	Large compartments; large visible and invisible zones.
	Accentuated relief, cut up.	Narrow compartments; numerous visible and invisible zones, broken up and irregular.
	Flat	Generally few compartments; poor terrestrial observations.
Covered and cut up	High relief	Many compartments; large visible zones.
	low relief	Many compartments. Few or no visible zones

2d - The principal lines of the terrain. Mark out on the map the main lines forming the plan of the terrain, valleys and principal crests. When the map is a little confused it is helpful to tint part of it, either the valleys or the crests, so as to accentuate the relief. It is desirable to push this study of the terrain to the extent, so to speak, learning the terrain by heart so as to be able to make it up from memory.

The special study can be made only in considering a determined direction. This study should bring out:

1st -- the portions of the terrain visible and invisible from the terrestrial observation posts of one of the two parties operating along this direction;

2d -- eventually, and above all as a matter of practice in the first studies, the compartments of terrain which can be subjected to a combined system of crossed fires.

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CHAPTER V

THE ENEMY

The obtaining and interpretation of information is one of the most difficult problems of the command, and we shall return to this subject in Part Two of this course. For the moment, we propose only to bring out and to classify the principal questions we must ask ourselves when we wish to study the enemy situation.

The object of this study is to permit us to compare the situation of the enemy with our own situation. Consequently it would seem natural to follow the same scheme as in the study of the means of action. But, as many things escape us in the ideas that we can gain of the enemy, it would appear more easy to pursue in the following order:

Strength of the enemy;
His attitude;
Value of the contact;
Possibilities of the enemy;
[illegible]

The strength of the enemy (See Course in Staff Work) is made known to us primarily through identifications of prisoners. From this may be deduced what is termed, perhaps improperly, his order of battle- that is to say, the units that the enemy has placed in line, and their front. Calculating this front, at least approximately, is indispensable, since, as we have seen in Chapter III, (for troops of a given value) the real power of a unit is determined by the relation of the effective strength of that unit to the front occupied.

We are not satisfied in merely knowing the power of the enemy. There is something that still more interests us-- the use that he will make of his forces, i.e., his intentions. We cannot, of course, penetrate all his secrets; moreover, he may change his plans during the course of the operations. It will be sufficient to seek and to note the apparent facts that may give us indications concerning his projects.

Under these conditions, the questions that arise and which it will be sufficient to answer, generally resolve themselves into two:

1st -- Is the enemy going to attack or defend?

2d -- Is the enemy playing an above-board game or is he trying to deceive us?

Thus put, the problem becomes a little less complicated; however, even in this form, the problem admits of only partial solutions.

To begin, let us consider the first question.

Are the intentions of the enemy offensive or defensive? If his intentions are offensive, he will advance, or attack us -- i.e., try to advance; if he intends to defend, he will await us; if he prefers refusing combat, he will leave. Now these three actions: advance, immobility, retirement--which we group under the term of attitude-- are easily perceptible. They interest us because they are the expression of the present intentions of the enemy. We may then put down in the scheme of our analysis the idea of attitude.

They are the expression of the present intention of the enemy, not of his future intention. Consequently we are not justified in setting down that:

an advance = offensive intention

a stop = defensive intention

But if the enemy's future intention is different from his present intention, this will be expressed, at the appropriate time, by a change of attitude. The enemy will cease his movement in advance or his attack; he will pass from movement to a stop or from a stop to movement. This also will often be perceptible. And it will be very interesting to know, for a change in attitude corresponds, of necessity, to a modification in the intentions of the enemy.

To interpret the value of a change of attitude may be a delicate task and a heavy responsibility. For the moment we do not intend to go into this question, we simply wish to bring out that every change of attitude -- and even every hint, any preparation enabling us to foresee a change of attitude -- must be taken under serious consideration.

The second question may present itself as a dilemma, in the case of the offensive as well as in the case of the defensive.

1st. - In face of an enemy offensive, are we confronted by an advance guard, or has the enemy assembled his forces?

2d. - In face of an enemy on the defensive, are we confronted by outpost troops or by a battle position?

It cannot be denied -- and we shall have occasion to note it-- that appropriate dispositions are far from being the same in these different cases. We shall also have occasion to note that the problem is not easy to solve. However, it must be solved or rather, when the time comes, the command must choose one of the two hypotheses, take the one it desires, and play it. This, therefore, is another problem to be given a good position in our scheme. We shall place it under the heading "Value of the contact."

When we are not in immediate contact with the enemy, we shall substitute the thought of "distance of the enemy" for "value of the contact."

Finally, a plan of combat does not run on, without modification, from beginning to end. Considering what the enemy is doing or what he appears to have the intention of doing is not, therefore, sufficient; we must also see what he can do, his possibilities. These possibilities depend on:

-- the enemy's dispositions (what we may know of them) and, lacking exact ideas on these dispositions:

-- the time that he has had to prepare for combat;

-- the situation of his rear and the distance at which he finds himself from it;

-- the terrain. The terrain works for the enemy as it does for us and we must, from the enemy's viewpoint, study it with the same care as we did from our own point of view.

Without attempting here to go farther into the problem of interpreting information, it appears advisable, from now on, to stress the care with which we should study the enemy.

Up until the appearance of long range arms, the commander, with his own eyes, could see his battlefield and note on it by sight the dispositions and movements of the enemy. He could make his plan based on sure information.

The increase in range of arms and the use of smokeless powder -- creating the "void of the battlefield"-- have since many years rendered impossible sight reconnaissance of the enemy's dispositions. As long as we were without the means of making aerial investigations, we had but small possibility of knowing what the enemy was doing. To have waited for complete information before acting, would, under these conditions, have been a trap. Consequently, we found ourselves under the necessity of working in the unknown-- an unknown that could be solved only by combat.

We made our determinations. Perhaps we made them a little too completely and it is probable that the habit of deciding a priori has resulted in more or less neglect in the effort to seek and interpret information.

But new means of investigation (aerial observation, radiogoniometry, etc) have been developed during the war, and the secrets of the battle field are not so inviolable as they were twenty years ago. New possibilities have appeared and because of this certain ideas must be revised.

Study of the enemy situation has again become a very important factor of the decision; not only should the commander not neglect it, but he must particularly interest himself in it and most carefully guide those of his assistants who are specially charged with this task.

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11-25-24

CHAPTER VI

THE VALUE OF THE TROOPS

The value of the troops is a factor that can enter into school problems to only a slight extent. At the most, we can see in it only a sort of coefficient of the means of action. But in war it is a very important element and one that cannot be neglected.

Historical criticism must take this into deep consideration. A solution that, in the quiet of an office, appears simple would have been practically impossible of execution by the troops to which it would have been necessary to give it; another solution, appearing wildly rash, would really be void of danger on account of the special quality of the executants. We cannot soundly appreciate a solution of a war problem without having most scrupulously evaluated the real value of the troops; nor without the same precaution, can we seek to draw conclusions from an actual occurrence.

Finally, the development of the value of the troops must be one of the principal thoughts of the command; and without endeavoring to go to the bottom of so vast a subject, we cannot refrain from saying a few words about it here.

The Regulations tell us that the value of the troops depends upon the leading of the large units:

on their instruction,
on their noncommissioned and commissioned officers
on their state of morale
on their command (1)

INSTRUCTION

It has always been necessary to have instructed troops and no one can claim that instruction is any new and recent necessity. It is military instruction that established the superiority of the Roman legionary, the English archer of the middle ages, the French soldier of 1796 and 1918, the German soldier of 1870, the Japanese soldier of 1903. Here, it suffices to stress some new points.

In the first place, instruction is more complex, on account of the great number of specialties which we have to teach. One soldier cannot, of course, learn all the specialties; but it is necessary that he have at least one or two over and above his normal military instruction.

Then, and for a long time, instruction for combat could be, in large part, given on maneuver grounds. Today we can make only a beginning on the maneuver grounds. In a preceding chapter we have brought out the importance of terrain at the present day. Consequently thorough instruction can be given only on wide expanses of quite varied terrain. We must admit that these requirements cannot be met in the greater part of our garrisons and if we do not find a remedy for this it is to be feared that the army of the future will have large gaps in its instruction at the beginning of a campaign.

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(1) The study of Command is taken up in Chapter VII

Such instruction requires time and, at the risk of being paradoxical, we must say that we must not stake too much upon the particularly favorable results obtained during the war. It is true that we have been able to send recruits to the front after only some weeks of instruction; but it must be noted that these recruits entered as reinforcements into units that were already instructed and experienced in war. The situation would have bean quite different had it been necessary to create new units. We must also remember that this instruction was given in numerous camps, perfectly equipped, fully supplied with all necessary equipment and without limitation of funds. It would therefore be extremely dangerous to conclude, as we do sometimes, that the experience of the late war has shown that a few weeks suffice to perfect the instruction of a combatant.

In order to crystallize ideas, it would be useful to set up minimum requirement programs giving the detailed series of exercises a soldier of average aptitude must undergo to bring him up to the degree of instruction necessary for present day warfare.

THE NONCOMMISSIONED OFFICERS AND OFFICERS

In the constituted unit the value of the noncommissioned officers and the officers is also an essential factor and their selection is one of the most urgent and serious thoughts of the command. The command should never lose an opportunity to verify the aptitudes of each of its subordinates and to note what may be demanded of them.

In a long war, the filling of vacancies is not an easy task. We find ourselves short of noncommissioned officers and officers, particularly after a heavy engagement. Then those who have recovered from their wounds return to the front, find their places filled by new promotions who are not always as good as the old ones, and the situation is reversed- we have too many. Promotion, consequently, must be made with the more care as, despite all precautions, it will sometimes be impossible to take all individual interests into consideration.

The instruction of the noncommissioned officers and officers is, if possible, still more necessary and more delicate than that of the troops. During the war this problem was solved by a multiplicity of visits of observation and schools. This system is not free of disadvantages but these are fully compensated for by the advantages. In our army we have carried them on and developed them since the conclusion of peace and, under present conditions, it still seems the best method of keeping up and spreading military instruction.

THE TROOPS STATE OF MORALE

The morale of the troops is their degree of resistance to the various trials they are subjected to during a campaign.

It depends, in the first place, on the value of the morale of each individual. But above these individual morales, each unit has created in it a collective morale, a sort of common soul that reacts powerfully on each of its individual elements.

This morale is never a fixed quantity: it is perpetually varying; it rises and descends many degrees.

In the lower degrees, troops present only the collective characteristics of a "crowd", with its instability, its sudden changes of minds, its sharp alternation of elevated sentiments and depression, of heroism, and of panic. Such a collectivity even when animated by the finest sentiments and the most warlike qualities is practically useless for warfare. Whatever may be the value of the men composing it, it will have only an insufficient output.

"Napoleon said that "2 mamelukes could hold their own against 3 Frenchmen.; but 10 Frenchmen were not afraid of 10 mamelukes; 300 Frenchmen could beat an equal number of mamelukes; and 1,000 Frenchmen could beat 1,500 mamelukes, so great is the influence of tactics, of order and of evolutions." In ordinary language, so great is the moral influence of the mutual dependence established by discipline and rendered possible and efficient in combat by organization and disposition for mutual support" (Ardant du Picq: Le Combat Moderne)

Order, discipline-- these are the expression, or the means, of the cohesion on which, in the final analysis, everything falls back.

Cohesion results from the confidence of the soldier in his comrades and in his commanders. It enables division of labor and giving to each his special task, a task that he will accomplish, if need be, without care for his personal security, because he knows that another is watching over him and because he has confidence in that other.

Such confidence is long in developing, because it presupposes mutual close acquaintance and close association in mutual tests. It develops little by little in the various contacts of a common existence and through reciprocal services. It is here that are formed the bonds of comradeship and friendship that will later be cemented on the battlefield. Bit by bit, the units become conscious of themselves and this consciousness shows itself in an esprit de corps which makes each soldier consider his company, his regiment, his division infinitely superior to other units.

Until a proper esprit de corps has formed, the instrument of combat cannot put forth its maximum output. We always run the risk of individual failures; and a few failures of this sort, in a play in which all the roles are arranged, may be enough to ruin the efforts of all.

As work divides up, and as missions become specialized, cohesion becomes more difficult to attain, because it mounts to higher and higher echelons. According to Ardant du Picq, the squad was really the morale unit; the company itself was distant and the regiment still farther away. Today the squad, or rather, the combat group, is still the elementary cell; but the soldier, apparently more and more isolated on the battlefield, nevertheless is, and feels himself, more and more mutually dependent not only on his close neighbors, but also on the whole and particularly, on his artillery and his air service. Now, the war has shown that the soldier cares little about abstract things and that he has confidence in only such things as he knows well. He knows the artillery of his division, but he is not acquainted with artillery in general. During the war it was observed many times that when we reinforced a Division with artillery, the infantry regiments supported by the organic artillery of the Division were much less nervous, asked less often for "barrage fires." and were less prompt to attribute questionable shells than were regiments supported by visiting artillery. Thus, little by little, the need of cohesion mounts toward higher and higher units. It passes beyond the scope of the special arm and begins to take on form at the Division, which has become the real combat unit.

We do not always have the time necessary to await the formation of so highly developed an esprit de corps. Consequently we should always remember that in this case, the real output will always be more or less inferior to the theoretical output. Division of labor is made difficult; friction develops; the solutions adopted by the command must be more simple and the material means put at work must be more powerful.

EVOLUTION OF MORALE DURING A WAR

In addition to what is almost a daily variation in morale, history shows that during a war of any duration there is produced a fundamental change-- a change that is always oriented in the same direction. This may be verified not only in the recent war, but also in the wars of the Revolution and of the Empire, the Franco-German war of 1870, the Manchurian war, etc.

Young troops are ardent and filled with enthusiasm, but they have not acquired battle experience. Nor have they an idea of the physical and moral fatigue that accompany life in campaign. They are very brave and very impressionable at one and the same time; they are subject to excesses of enthusiasm and accesses of discouragement. Through courage, they endeavor to fill up the gaps due to their inexperience; but present day warfare rarely accepts this substitution. They require command that is both firm and cool and it is advisable to watch very carefully over their first engagements. "The results of the first engagements of a war have a very special importance. .. Therefore, at the time of the first engagement, it is essential that all necessary measures be taken to engage the troops under favorable conditions, to assure for them as energetic material support as possible, and, above all, powerful fire support." (Instructions for the Tactical Use of Large Units).

This first period is short. Battle field realities impress themselves quickly. Reaction is inevitable; depending on the initial value of the troops, it is more or less violent, but generally not of long duration.

After this moment, the soldier knows. He realizes that there can be no success without combination of effort and he commences thinking about it; he reasons more cooly and judges his commanders. He asks nothing better than to risk his life; but success must appear to him as being possible or he must feel himself in the presence of a higher duty. At the same time, a certain clearing out is effected: talents are shown, characters reveal themselves. Morale, like unto a spring, remains strong and the sense of realities is developed and strengthened. The war tool has been tempered to a first class weapon. Particularly during this period is it that we find these troops "whose good condition authorizes all audacities" (Instruction on the Tactical Use of Large Units)

But , in the end, frittering away accentuates; the best elements, valuable leaders and intrepid soldiers, finally disappear; they risk more and consequently are larger targets. The army becomes impoverished and remembrance of hecatombs weighs heavily on the morale of those that remain. Operations become possible only with the support of greater and greater material means; and, despite this, the results obtained become increasingly smaller. All the experience and all the energy of the leaders is not too much to hold up against the rising discouragement- discouragement which, if it be not offset, risks compromising the result of the war.

CRISES OF MORALE

In the course of a war, the state of morale of troops undergoes a series of crises - sometimes slow and deep, sometimes violent and sudden.

These last-- panics -- are primarily due to surprises or some sudden menace of danger. But, depending on the morale of the troops, the same cause produces very different effects. Citing only events of long ago, let us compare, for example, the surprises of Quièvrain in 1792 and of Dego in 1796. In the first case the army breaks up. In the second, the troops cooly quit the confusion filled village, but gather together some distance in rear, sort themselves out and, without waiting for their commanders, resolutely move to the attack. Thus, reactions to surprise are very different, depending on the degree of training and the experience of the troops.

The duty of the commander is to avoid being surprised, from which the importance justly given to security. But, whatever we may do, we never succeed in completely avoiding it. We must therefore strengthen the morale of the troops and render them capable of reacting against the causes of panic.

In accomplishing this, the first thing to do is to watch over the state of morale, note its manifestations and follow their variations very carefully. This is not an easy thing; it is a question that cannot be gone into too thoroughly and, following closely after a war, exact and strongly objective studies, would be of great utility.

Here, it will be sufficient to enumerate the principal points that must receive the attention of the command.

First, the development of military instruction which is in constant need of improvement and which must sometimes be recommenced at the very beginning, especially after periods of intense effort. In the beginning, these exercises are not looked on with a favorable eye by the troops, who are prompt to consider that they have proved themselves and that they have nothing more to learn. But we need not pay much attention to this opinion which, in reality, quickly disappears.

Then, all possible comfort for the troops, rations, quarters, sales stores, postal service, newspapers, welfare societies, leaves-- as far as these latter may be compatible with the necessities of operations.

After that, development of comradeship, not only within the arm but from one arm to another; establishing of frequent contacts between the staff officers and the troops.

Justice and suitability in recompenses and punishments.

Personal contact between the commander and the soldier; confidence of the commander in the soldier to whom we must tell nothing but truth, if not necessarily all of the truth; to the man who has been deceived once, everything is "bunk." ("bourrage de crâne")

The army regulations place on the commander the strict duty of constantly maintaining a high morale among his troops. He cannot neglect this without endangering the success of the operations he intends to undertake.

ESTIMATES OF MORALE

Perhaps we should put ourselves on guard against developing exaggerated opinions concerning morale. We are sometimes afraid of appearing to doubt the morale of our troops and, in order not to seem pessimistic, we let ourselves be deluded into hopes that cannot be realized. It would of course be wrong to underestimate the value of the unit that one commands; but it would be infinitely worse to sin through excess of confidence. We shall come back to this question when we discuss the idea of decisive action (Part Three, Chapter III)

THE VALUE OF THE MATERIEL

To the purely morale elements of the value of the troops we must add the value of the materiel at the disposition of the troops. On the battlefield, materiel has taken on such importance that neither courage nor skilfulness compensate for want of it. We have often said, during the war: One does not fight against materiel with troops. So, the value of materiel is an extremely important factor of the confidence of the soldier in himself and in his commanders.

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"Abundance and quality of materiel permit all the arms to develop their means of fire. It also gives the possibility of installing numerous transmissions, of rapidly establishing good communications; it facilitates creating obstacles and cover.

When troops are fully provided with the necessary materiel, their value is to that extent increased. (Instruction on the Tactical Use of Large Units, Article 106).

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CHAPTER VII

THE COMMAND

The importance of the command is not generally questioned. At first sight, however, its intervention appears to be so difficult and so limited that we sometimes ask ourselves if the commander can really exercise any influence on events, if he is not simply a more or less powerless spectator. The famous scene of the council of war presided over by Kutusoff in Tolstoi's novel, "War and Peace", has been the theme of many misleading dissertations. At other times, some have tried to balance the value of the troops against the value of the leader, seeking to unreasonably glorify, or depreciate, one at the expense of the other.

On this subject all sorts of paradoxes are possible for the simple reason that the value of a unit is a function of both the value of the troops themselves and the value of the commander. They are two factors that are mutually multiplied -- if one approaches zero, the product itself approaches zero. Without the commander, the troops are useless, and the commander can do nothing without the troops. There have always been commanders who were insufficient for their tasks and consequently there have been "soldiers' battles". There have always been mediocre troops incapable of carrying out the conceptions of their commanders. The most apt expression of these two conditions was given by BONAPARTE when he wrote that after having had to do with armys without Generals, he found himself in face of a General without an army. But, however numerous they may be, the conclusions that we may draw from these facts and examples would be valid only if we never met, in combination, the two elements which form the real war implement: a good commander and good troops. Reading history -- and it is not necessary to go far back into the past -- suffices to show that this combination is possible.

It does not follow from this that the role of the commander is easy -- a whole lifetime is not too much in which to prepare ourselves for it. Work, of course, is not sufficient. One cannot be a great commander without exceptional qualities of intuition and action -- qualities that may be discerned by analysis, but which analysis alone is powerless to give. Each one of us is endowed, and endowed to mount more or less high. But what is beyond doubt is that work is indispensable to the man who wishes to do the best he can with his natural gifts. All who are called upon to command must early consider this possibility and plan to acquire the necessary qualities.

KNOWLEDGE

The role of the commander is preeminently a role of action; knowledge is not sufficient. But knowledge is indispensable. According to WILLISEN, there is a great distance from knowledge to action, but from ignorance to action there is an impassable abyss. Wide military culture is necessary, and naturally it is wider as one has more elevated functions in view.

Here, since we are writing for young officers, it is no doubt the time to remark that tactics is not a mathematical science. It starts off from concrete given quantities, always multiple, always incompletely known, and the reasonings based

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on such given quantities can be extended with only the greatest precaution. The "lines of reasoning" inevitably end, sooner or later, in absurdities. This is troublesome and might even appear paradoxical were it not that we find the same thing true of other experimental sciences.

In the preceding chapters we have examined into what comprise the elements of a decision. In each special case these elements have a determinate value. But, and of necessity, the estimating of this value is subjective; in two different minds it may vary in a quite marked manner; each of them will be more or less near to reality depending on the correctness of their judgement. The first task, then, consists of seeking to estimate these elementary values justly. This is a matter of experience, of observation patiently followed out without being fettered by foregone conclusions. Each fact must be placed in its proper place, studied in its position, connected with its antecedents and its consequences; we cannot go too deeply into the list of facts and into preciseness of detail.

Estimating the value of the different elements of the situation is not sufficient. We must arrive at a decision, that is to say, action. Now, there exists no method for passing directly from consideration of the elements of a decision to the decision itself. There is a break, an interruption; the mind must take a stand, "make the plunge". Therefore it is useless to seek the solution of a problem through a sort of deductive reasoning; it is not alternate analysis and synthesis that we must go through. It is through this double operation that the mind clears itself up and succeeds in finding in itself the needed decision. If analysis is insufficient, the decision will not be a well informed one; but if a synthesis be not made, the decision will not be made.

ORGANIZATION.

It goes without saying that it is the facts of war and the conduct of operations that form the basis of military art; but this art would be highly incomplete were it not that in it a large space is given to organization. To know how to use an implement for war is only one of the rôles of the command; it is often necessary to create this instrument; it is always necessary to keep it in good condition.

In war, work on organization is ever under way. Its initial lines are marked out, but war experience quickly reveals gaps. Certain organs show up as useless; others are insufficiently developed; others have to be created in entirety. In all cases, we have to keep them going and keep up their effectives. We must also carefully watch over the noncommissioned officers and officers. Selecting and assigning subordinates -- the art of knowing men -- is, as we have already insisted, an important part of the role of command.

Once the war implement is made, we must also keep it constantly in good condition, from the material as well as the morale standpoint.

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11-26-24

Finally, every unit is provided with more or less numerous services the direction and functioning of which must be assured by the commander -- a thing that he cannot do unless he has thoroughly studied their organization and methods of use.

The commander, of course, is aided in all these questions of organization. But it is useful for him to know them himself in order to keep abreast of all and to be able to mark out the principal lines of the work he intends to do.

COMMAND

In the army, command presents a special character which accentuates itself as we rise in the various echelons of the hierarchy.

The commander does not directly command the executants; he gives his orders to commanders who themselves have other commanders under their orders. All these commanders have their jurisdiction and they are entitled to a certain amount of independence. A good output is possible only by giving each echelon a sufficiently large share of initiative, which initiative must be so handled as to insure coordination of individual actions.

Secondly, as soon as we reach an echelon a little high in degree, the greater part of the material labor is not done by the commander himself. To accomplish this he has auxiliaries at his disposition from whom he should get results after giving them the necessary directives.

Here is a double difficulty.

The amount of initiative to be given the executants constitutes a delicate question. Theoretically, it should be fixed according to the given quantities of the situation; we shall give this question further study under the heading of Centralization or Decentralization of Command.

In practice, however, the commander must often take the character of his subordinates into consideration. He does this either by parcelling out the missions according to the capacity of each one or by giving orders that are more or less detailed, more or less precise.

Generally, however, it is a delusion and a snare to try to compensate for lack of initiative in a subordinate by an excess of details in orders. Unexpected things will always happen and in this case there will be no chance of the subordinate's making a suitable decision since he is acting in furtherance of a plan that he has not conceived, and perhaps not even understood. Even if he has understood it, he must know not what he ought to do, but what his commander would do were the commander in his place. This element of hesitation alone suffices to disorient him.

We cannot too strongly warn young officers against the tendency they frequently have to prescribe details that are the province of their subordinates.

It is the more easy to sin to excess in this matter as, in reality, their are no absolutely exact lines of demarcation between the rights and duties of the different degrees of the military heirarchy. In practice, among a given set of commanders, an understanding is arrived at after some few clashes and we finish by knowing where we stand. But in school problems we cannot take these matters into consideration. The only general rule that we can give -- and it is more of a guide than a rule -- is that we must refrain from, at one and the same time, fixing in an order both an objective to be attained and the dispositions to be made to attain that objective, every time that we are not able, by ourselves and immediately, to take care of anything that may turn up during the execution. We sometimes say that we execute well only what we have ourselves conceived; this is perhaps exaggeration, but certain it is that it is always more difficult to execute what has been conceived by another.

Educating the initiatives of his subordinates is also one of the roles of the commander. This is not always easy; it requires patience and a certain amount of self-denial. With an inexperienced subordinate -- and beginners, by definition, are always inexperienced -- it is often easier to do a thing oneself than to have it done. It is a grave error to thus do what should be done by another. We must guide the subordinate but not substitute ourself for him. By proceeding this way it is true that time will be lost in the beginning, but we will thereby render service to the whole and finally to ourselves.

Finally, we must refrain from discouraging attempts at initiative. We cannot expect that all these attempts will be successful; there will always be some that are embarrassing. If they are exceptional, we must learn to accept them without recrimination.

In addition, we must not think that the commander has rendered himself powerless even when he has left a large share of initiative to the executants. He knows that the important orders given by his subordinates will be communicated to him and it is generally advisable for him to take note of them before execution is started. Moreover, he does not live in a "tower of ivory". He frequently sees his subordinates, he talks with them; he tells them of his intentions; with them he considers the different eventualities that may arise; if necessary, he explains to them the reasons that have decided/to adopt one solution rather than another. Thus, on one hand, he clears up their action while on the other he can interfere if the orders given stray from the path that he wishes to follow.

All of this permits limiting the prescriptions of the written order to the strictly necessary, so that the commander may himself take, and give to each, a proper share of responsibility.

It is sometimes said: is it not easier to prescribe than to be obliged to correct afterward? Well no, it is not easier. First, there is the great danger that the

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11-26-24

commander may spread out his attention in all directions; by doing the work of his subordinates he loses his own from view. Then also, it cannot be conceived that everything in the order of the subordinate would have to be corrected; if this were so, the latter would not be the right man in the right place. When there are corrections to be made they will generally bear on only a few points and the greater part of the time these will be details that the commander would not have thought of arranging.

The whole art of command lies in an exact equilibrium between what we should ourselves prescribe and what we should leave to the initiative of the executants. This requires a special tact that is acquired by observation and experience but which cannot be reduced to a formula.

What we have just said of the commander with respect to his subordinates applies, in due proportion, to his relations with his immediate auxiliaries, his staff. As we have explained, however, in the introduction to the Staff course, this is more a question of convenience than a matter of necessity. Even as regards his own echelon, it is none the less true that if it be important for the commander not to be ignorant of details, he should not allow himself to be absorbed by them. Along this order of ideas, we have been led here to distinguish between the decision and the order. This distinction is not made by the regulations, which does not concern itself with the work within the staff. As for us, the thing we are after is quite different: we wish to show where the work of the Command ceases and where that of the Staff begins; consequently we are interested in grasping this distinction. It goes without saying that we make it merely as a matter of study and the solutions that we will be led to propose must be considered as the indication of a tendency and not as a strict limitation.

All the qualities that we have just enumerated still are not sufficient to make the complete commander. For war is not a simple intellectual speculation. It is, using the old phrase of JOMINI "a frightful and passionate drama". These words which we more or less mechanically repeated to one another a dozen years ago have today become a living truth. But in this drama, there are particularly hard hours, hours in which difficulties pile up, in which the future seems to close its doors upon us, hours when great responsibilities bear most heavily on the commander "one does not realize the strength of soul required to give battle" said NAPOLEON. In these critical moments, while around the commander, and sometimes among the people about him, criticisms are whispered, faces darken, looks are averted, when all indicates that hearts are weakening -- the commander must have his large share of strength of soul to not see, to not hear and remain himself, eyes fixed on the objective he has given himself. He must have character, in every acceptance of the word. Only under this condition will he be truly worthy of commanding, only then will he, under all circumstances, be able to justify the confidence of his chiefs, his troops, and his Country.

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11-26-24

CHAPTER VIII

GENERAL SCHEME OF A DECISION

The preceding analyses show that, in war, situations are extremely variable and we may, without exaggeration, state that we never find two identical situations.

Therefore all decisions made by the commander must be "made to measure"; the "type-solution decision is deceptive"; each particular case requires a special study and a special decision.

The study may, of course, be made in an empirical manner and with a certain amount of practice, we may easily make judicious decisions without forcing ourselves to follow a determined method. For the beginner, however, it is none the less true that a reasoned method is a powerful aid and this is why it has appeared useful to us to devote a chapter to what might be called the mechanism of the decision -- that is to say, the series of more or less conscious mental processes which constitute it.

In doing this we shall be obliged to request the reader to tentatively admit certain basic facts that can be established only later. It would be difficult to proceed otherwise because, on account of the complexness and interdependence of different questions, the study of tactics presents itself less under the form of a series of closely entwined reasonings than under the form of different points of view mutually embracing one another.

The complete cycle of a decision comprises:

study of the mission;
study of the situation;
the decision proper;
the order.

We shall pass rapidly over the first two points as they have already been studied in the preceding chapters.

STUDY OF THE MISSION.

We recall to mind that the essential points which the study of the mission should bring out are:

the attitude to be observed with respect to the enemy;
the concrete limits of the action;
the role of the unit with respect to neighboring troops;
and finally, obligations relative to the execution.

STUDY OF THE SITUATION

The examination of the situation will bear successively on:

/lkb
11-26-24

1st - The means of action:

their value with respect to the front of action, taking reinforcements into consideration, and noting degree of preparation for combat of these latter.

2d - The terrain:

its general aspect: wide and rolling, cut up into compartments, covered

its special properties as regards direction of the action considered -- zones visible and invisible from terrestrial observation points; -- defensive points or compartments; avenues of approach.

3d - The enemy:

his strength, characterised by the frontage of units in line;

his attitude;

the exactness and value of the contact, and finally, possible lines of action open to the enemy.

SYNTHESIS OF THE SITUATION

In order to be useful, this first study must result in simple conclusions relating to the operation to be brought off.

It is relatively simple for the first two.

The means of action enable us to make a simultaneous effort along the whole front or else they will permit action of all the means on only a part of the front at one and the same time.

Sometimes the terrain favors combination of the arms or movement; sometimes it favors neither.

As regards the enemy, the affair is more difficult, because part of the necessary facts always escape us. In the greater number of cases, however, action can be organized on only a single hypothesis. Dispositions suitable for making contact with an enemy in position lend themselves but poorly to an engagement against an enemy in movement. The dispositions to be made when we find ourselves in face of a doubtful or weak contact would not be suitable in the case of an exact or strong contact. From this it results that the commander is obliged to interpret the situation, to take a stand upon a hypotheses based, if not on the possibilities of the enemy, at least upon the positive given quantities that he can perceive; strength, attitude and value of the contact. His decision will be built up as a function of this fixed resolution.

/lkb
11-26-24

There is every advantage in having this hypothesis a very definite one because it is the basis, not only of the plan of action, but also of the plan of information. It is not absolutely obligatory upon the commander to communicate it to the executants. However, by not communicating it, he runs the risk of seeing his action develop improperly if he has been in error in his diagnosis.

THE DECISION

This preliminary task accomplished, the commander is able to make his decision.

The essential points of this decision are:

1st -- The combined decision, which comprises:

- the fixing of the successive objectives;
- the degree of centralization of command;
- the choice, or adaptation, of the plan of maneuver.

2d -- The plan of use of the troops.

3d -- The plan of information.

4th -- The plan of use of the services.

Each of these is in more or less close relation with the different given quantities of the mission and of the situation.

THE COMBINED DECISION

(a) The fixing of the successive objectives.

The mission imposed by higher authority fixes a more or less distant goal which often can be reached only by successive pauses. The first operation consists in determining and marking out these pauses.

The distance between pauses will result primarily from the possible modifications of the situation during the course of the operation. The more chance there is of these modifications being important, the closer spaced should be the successive objectives.

While there are many disadvantages resulting from too great spacing of successive objectives, there are no fewer as a result of spacing them too closely. Multiplication of successive objectives fritters away and slows up the action and ends in depriving it of all its power.

(b) The degree of centralization of command.

The first objective decided upon, the commander must ask himself if he wishes to attain it by a single action of the whole -- the details of which he will arrange himself, or else by simply combined actions in which more or less initiative will be left to the executants.

/lkb
11-26-24

In practice, the solution adopted is always influenced by the temperament of the particular commander. Nevertheless, we can find relations between the elements of the situation and the degree of centralization of the command.

Centralization is necessary when the actions of neighboring units react so closely upon one another that they are absolutely mutually dependent. Then it is necessary that the chief himself take in hand the management of the affair. We shall see that this centralization is generally necessary when the unit acts upon a narrow front, in terrain having wide compartments and in presence of a strong enemy.

When these conditions do not exist, it is possible, and often necessary, to leave certain independence to the executants. The commander limits himself to orienting the efforts of each one so as to secure the degree of convergence that he judges useful for the success of his operation.

Finally, decentralization attains its maximum when conditions are the inverse of those we have just pointed out, that is to say: a wide front of action, many compartments of the terrain, a weak enemy.

(c) The plan of maneuver (or the adaptation of the plan of maneuver).

The plan of maneuver may comprise (See Part Three)

combinations of direction;
choice of a zone of principal effort;
the general distribution of the forces
 in front line and reserve units.

USE OF THE TROOPS

In speaking of the use of troops we do not mean to go back to the very detailed plans for use of troops which we had the habit of making during the war. Here the question is simply this: the goal to be reached being decided upon, to split up the task among the immediately and directly subordinate units. With reservations as to the modifications imposed by differences of composition of the Division and the Corps (See above, Chapter III), we must fix:

the objectives, the directions, the zones of action and the front of each subordinate unit;

the additional means which must be given to each of them;

and finally, if there be occasion for it, the mutual support to be given by neighboring units.

Thus considered, the plan of use of troops reduces, in the main, to the parcelling out of means and missions.

/lkb
11-26-24

These points fixed, the decision may be considered complete in so far as the troops are concerned.

PLAN OF INFORMATION (1)

We have seen that the commander, in order to come to a decision, had to make a hypothesis upon the enemy. What is this hypothesis worth? Will the enemy do what we have forecast? Will he remain in his present position or will he try to maneuver?

Just so many questions that we must solve. Their solution will be the object of the directives that the commander will give his staff for the establishing of the plan of information.

PLAN OF USE OF THE SERVICES (1)

We know that proper functioning of the services is a condition indispensable to the success of an operation. Without going into details, the commander still should give the few directives necessary and, in particular, indicate:

the services whose functioning should be considered of first urgence;
the units which must be served first.

THE ORDER

In the large units, when the commander has made his decision, the drawing up of the order is done by the staff. This question is studied in detail in the staff course, to which we refer. (Any question that may arise -- Tr).

CONCLUSIONS

Such is the general scheme of a decision. Naturally, it will undergo some modifications depending on the type of given operation that we may have in view. But the cycle itself will not be sensibly modified.

We have enumerated the different operations in the order that appeared most desirable. However, we must not think that we can completely solve one question before passing to the next one. The decision is an indivisible whole; the solutions adopted for the different parts mutually react on one another and it is sometimes necessary to recommence the operation several times before being able to bring it to completion. The mind does not operate by a series of deductions; it operates rather by a series of successive approximations and adjustings.

We see at once that the operation is very complex, that the smallest decision calls all the mental faculties and experience of the commander into play and that the problem can be approached as a whole only after a more or less long general preparation.

It seems to us that this preparation should be simultaneously made along two different routes --

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(1) See the Staff course.

one a method by training, the other a method by study.

The training exercises should be so arranged as to confront the mind with progressive difficulties and from simple given quantities rise by degrees to the complexities of reality. This is the object of the practical exercises of the Course.

But alongside these exercises, and parallel with them, it is useful to have a method by study. We must classify the ideas we acquire in order to complete them as we go along, and in order to find them again in case of need. Among the different possible methods, the best one seems to us to be the one that consists in seeking the relations which may exist between the elements of the situation on one hand, and the terms of the decision, on the other. Evidently, this method is longer than the dogmatic method, but it appears to us to be the more sure. At all events, it is the only one that enables us to accept without mental repugnance facts and ideas that are not only dissimilar, but even, apparently, contradictory. It is the method that we will follow in Parts Two and Three of this work.

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11-26-24

PART TWO

THE COMBINATION OF ARMS

CHAPTER I

COMBINATION AND LIAISON

"It is a certainty that the salient fact of the war is the progress made in the armament of troops.........

The effects of this armament have been noted by everyone and must serve as a basis for the rules concerning the use of troops.

The power of fire has shown itself to be overwhelming. A front consisting of well placed automatic arms and well supported by fully supplied artillery can be crushed in only by a force having itself equally powerful materiel at its disposition. Conversely, concentrating means of fire of all sorts upon a narrow sector permits crushing effects that are always efficacious and often irresistible." (Instruction on the Tactical use of Large Units, Report to the Minister)

This power of fire cannot be denied; however, it attains this complete development only under certain conditions:

-- Conditions relating to power: We must have sufficiently numerous and well supplied fire weapons;

-- Conditions relating to efficacy; the adversary must be vulnerable;

-- Conditions relating to opportunity; the fire must be produced where and when we have need of it.

Along with general value of the fire there is also the special value of a system of fires. In practice, it is this latter alone that counts and we must know how to arrange it.

So, in each case, the commander must solve the problem of organization of fires. It would be dangerous for him to limit himself to generalities.

Along with power of fire, the necessity of permanence of fire has been demonstrated.

This thing was not unknown before the war. Nevertheless we were, to some extent, travelling along the beaten paths of a period in which we contented ourselves with an alternation of fire and movement: "Movement in advance alone is decisive and irresistible; but it is so only when efficacious, intense fire has opened the way for such movement (1)."

The late war has shown us the necessity of maintaining, at all cost, the simultaneousness of fire and movement.

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(1) Decree of 28 May 1895 on Field service in campaign (article 134)

Preparation by fire prior to the movement may be necessary, but it is not sufficient. The greater part of the time we can provide for this double necessity of power and permanence of fire only by a simultaneous employment of different arms in the elementary acts of combat.

This problem -- the problem of liaison of arms -- is not a new one. In particular, it has always been studied at the Ecole de Guerre, and it is the principal reason for the course in General Tactics. It has, however, become more difficult than in the past.

In reality, it subdivides into two distinct problems to which we have sometimes given the names: "upper" liaison and "lower" liaison.

Upper liaison is the commanders giving the same mission to units of different arms.

Lower liaison is the putting into direct contact units of different arms working on the same objective.

These are two things that are essentially different and it would be dangerous to have them expressed by the same word.

After all, in practice, what happens most often when we speak of the liaison of arms? At the beginning, we indeed accept the necessity of upper liaison; but, once we have paid this tribute to the utility of command, we no longer concern ourselves about it -- instead of that, we reason, or rather, we put up questions as though the common commander no longer existed. We think that we are talking of liaison in general; as a matter of fact we concern ourselves only with lower liaison.

We thus come to demanding of this latter things that it cannot give. Here, doubtless, there is a more or less unwitting persistence of the ideas of the period when, in the thoughts of the Command, fire had not yet taken on all the importance that it has today.

But times have changed. There is no more movement possible without combination of fires. The greater number of these combinations of fire can be obtained only by concentrations of means -- and whoever says concentrations of means upon one point, of necessity, says economies on other points. Which is to say that the quantity of fire at the disposal of the commander can generally, at a given moment, be used only for a small number of privileged troops.

Therefore, of lower liaison, we can ask only the best possible use of the fire "granted" by the Command. To go farther is to "go out of bounds."

Liaison, as defined by the new Instruction straightens everything out.

"Liaison allows the commander to insure at all echelons

the contacts necessary for the proper execution of his decisions."

To this idea of liaison is opposed the idea of "combination."

"Maneuver has as object combining the use of forces with a view to accomplishing the mission assigned by the command."

The combination of the action of the different arms on the battlefield is the first step in maneuver. In the question that we are studying, this combination is the essential act of the command; liaison comes afterward, because it can exist only within an existing combination.

In what follows we shall, above all, study the problem of the combination of arms -- the question of liaison from arm to arm seeming to us to belong rather to the study of each special arm.

CHAPTER II

DEFENSE OF A POSITION OF RESISTANCE

Before starting the complete study of a defensive combat, it is advisable to see what the elementary act of the defense consists of and how we can organize the defense of a given zone of terrain.

In this first chapter we shall concern ourselves only with the pure defensive, that is to say, defense by fire. Study of the combination of the defense with the attack -- the counter offensive -- will come later.

I. FIRE

The main thing in defensive preparation is creating a barrier of fire in front of the position that is to be held.

The efficacy of this barrier will depend on:

- its density;
- its depth.

DENSITY OF FIRE

The density of fire depends on the effectives put into line and their vulnerability.

Under present conditions of armament, we may assume that the fire will be sufficiently dense if the means put into line amount to:

- Infantry, one battalion per 1,100 yards.
- Artillery, three battalions per 2,200 yards, counter-battery not included.

(See following: Influences of the front of action).

But it is necessary that this density be nearly maintained during the entire duration of the attack. From the time of attack on, the losses of the defender in artillery and infantry -- his vulnerability -- must be taken into consideration.

The vulnerability of the artillery is such that we are obliged to install it in parts of the terrain defiladed from the terrestrial observation points of the enemy. Even at that, the artillery must take special measures in order not to be picked up: silent batteries, false positions, etc..... When these precautions have been taken, the artillery may keep up its stopping fires for quite some time, even under quite violent counter battery fire.

As regards the infantry, it has, above all, to fear the fire of enemy batteries which do not generally unmask themselves before the attack and which, consequently, cannot be effectively counter battered.

The defender's infantry will be particularly vulnerable in the zones most favorable to the enemy artillery, that is to say, in the zones visible from the enemy's terrestrial observation points.

observation points. From this, the advantage of reverse slopes which was demonstrated many times during the war. Unfortunately, it is not always possible for the infantry to place itself on a reverse slope. In this case we must expect rapid attrition and consequently a proportional diminution of the density of fire.

DEPTH OF THE BEATEN ZONE

The depth of the barrier of fires is a function of the range of arms. As a consequence of the difference in range between the fire of infantry and the fire of artillery, also because the fires of artillery must always be placed some distance in front of the infantry, the zone of fire will habitually comprise three successive bands:

--a zone of artillery fires;
--a zone of combined fires of infantry and artillery;
--a zone of infantry fires.

The maximum limit of the depth of the zone is the range of the arms. As this maximum limit cannot always be attained, it is interesting to determine what is the acceptable minimum limit.

The effects of fire are never instantaneous. They have efficacy only -- particularly artillery fire -- when the enemy is obliged to undergo them for a certain time. Thus it was that the depth of the zone to be traversed under the fires of our artillery appears to have been one of the principal causes of the breaking down of the German attack of July 15, 1918. Consequently, it is desirable that the depth of the (enemy's--Tr.) movement under the defender's fire be as great as possible.

The mixed zone (combined fires of infantry and artillery) is the one that gives the most powerful barrages. Its theoretical depth comes from the ranges of the automatic arms, rifle and machine gun. In favorable terrain it could attain 1,650 to 2,200 yards; but, in practice, the necessity of echelonning the infantry reduces its depth to 1,100 or 1,320 yards. In order to calculate the acceptable minimum depth, we must take into consideration the time necessary to put down the fires, and not forget that the short limit of our artillery is about 220 yards in front of the first line of infantry. Considering all of these things, a field of fire from 550 to 660 yards in front of our infantry appears to be a minimum. Below this limit, we must consider the barrage of fire to be insufficient in depth, and if it is impossible to increase it, we must seek some means of compensating for it.

II. DISPOSITIONS FOR RESISTANCE

DISPOSITIONS OF THE INFANTRY

The dispositions of infantry underwent a great evolution during the late war. We believe it will be useful to recall the salient points of this evolution from the triple viewpoints of direct fire, flanking fire and defensive points.

DIRECT FIRE

In 1914 the principal arm of the infantry was the rifle. The machine gun was considered only an adjunct. To obtain a sufficiently dense barrage of fires, it was necessary to put many rifles into line, and it was necessary to put these rifles on the same line. The fire came from a thin linear formation.

Our first conception of trench warfare was putting this theory into practice. We placed a very dense line of fires in contact with the enemy and we covered the riflemen by a trench.(Sketch No. 1).

All went well until the artillery was able to smash up this single trench. From this moment we had to look for something else. We established successive firing lines, intended to be defended successively. In the meantime, the development of automatic arms allowed us to spread out the men firing, and, with the same effective, furnish several lines with a sufficient density of fires (Sketch No. 2).

But the artillery continued to develop its means of fire. In the attacks, the trenches were subjected to such severe bombardments that the machine guns in them became useless. We then commenced taking the machine guns out of the first line trenches and echeloning them to the rear so that, while they were less vulnerable, they could nevertheless participate in the defense of the first line. There was a third system. It differed from the preceding one in that by it was sought a convergence of all the fires in a single sheet instead of spreading them out between the successive lines. (Sketch No.3).

In 1918 came a series of oscillations of the front which required taking up the defensive on new positions. What was the infantry to do? Was it to return to the system of 1914?

No. The infantry had gained confidence in its automatic arms. It had accustomed itself to echeloning in depth and to see in this echeloning the essence of its combat dispositions. For use in daily life it wanted trenches and communication trenches; but for combat it counted primarily on echeloning in depth of its means of fire. In other words, its combat dispositions had little by little become independent of the trenches. The trenches done away with, the dispositions remained.

Thus, after the period of the war of the trenches, and as a result, on one hand, of the development of artillery, on the other hand, of the development of automatic arms, the linear formation of 1914 tends to disappear -- as often, at least, as the terrain lends itself favorably -- giving way to a sort of cellular formation, the total depth of which may attain 550 to 1,100 yards, the habitual depth of positions of resistance in the war of the trenches.

FLANKING ACTION (Sketches No. 2 and 3).

The great disadvantage of fire perpendicular to the front is that the firer is the natural objective of the assailant. In fact, the assailant begins by covering the points he wishes to attack by fire and his fire blinds the defenders or puts them out of action.

This inconvenience occurs to a maximum degree in the linear formation where the emplacement occupied by the firers is easy to pick up. From this comes the idea of giving the line a broken or bastionned trace and of placing in these breaks means of fire having a large output -- easier to protect than groups of firers.

The idea of flanking action, well known since the beginning of the war but more or less neglected in practice, gained popularity bit by bit until it even became exaggerated, and the regulations of 1916 upon the employment of machine guns set down as a principle that all the machine guns were to be placed so as to assure flanking action. This method, to be sure, is the one that best utilizes the power of automatic arms; but, with the increasing numbers of machine guns, this became quite complicated. Also, if the weapon delivering perpendicular flanking fire plays its part perfectly when it is not on the front that is being attacked, it has the inconvenience of being itself in the first line and its functioning is not to be depended upon when it is included in the zone of attack.

A deep zone is naturally much more difficult to blind than a line. Also, the disposition of infantry in depth allows it to give itself the advantage of oblique fires without necessitating placing flanking weapons in the first line. Flanking action is still obtained, but the process has lost its rigidity; and the sheet of fire, instead of being composed of trajectories crossing at right angles, is formed by an irregular criss-crossing of lines of fire covering, by frontal and oblique fire, the zone to be beaten.

It should be well understood that the utility of flanking action -- the old system -- reappears in the case where, as a result of form of the terrain or for other cause, the infantry finds itself obliged to adopt a purely linear defensive.

DEFENSIVE POINTS.

In the new system, what happens to the defensive point?

The great danger of a line without depth is that the whole line risks collapsing if the enemy captures one point of it. Each piece of trench, taken in flank, is too vulnerable to be able to continue its action.

In 1914, therefore, when we wished to limit the results of partial successes of the enemy, we were led to attempt to divide the line into independent compartments. The most simple method was to hook the line of resistance to the natural defensive points of the terrain: dominating points, villages, woods. By so organizing the defense of these defensive points that they could make an all round defense and by placing echelons of fires in rear of the intervals, we succeeded either in placing the assailant in zones of crossed fires if he wished to pass between two defensive points or to force him to make direct attacks that were particularly costly.

The disadvantage of the linear formation existed in the first period of trench warfare, further aggravated by the fact that when the enemy had penetrated into one trench, he found himself sheltered from the fire coming from the following trench. Consequently the conception of the artificial defensive point -- island or nucleus, of resistance -- quickly appears as a necessary palliative for the rigidity of the trench. These strong points were of first made up of works of various sorts; but aerial photography quickly revealed their positions, and it was necessary to find less visible solutions. We then tried to constitute islands of resistance, hidden in the network of trenches so that they could not be picked up by enemy aviation, but reveal themselves only when they were needed.

When we substituted a zone studded with machine guns for the line, the necessity of the strong point did not, at first, appear to the same degree. The capture of a machine gun or of a combat group no longer had the same repercussion on the whole as the capture of a piece of trench or of a strong point. The constituting of islands of resistance, however, always retards erosion of the (defensive) system and often obliges the attacker to make two attempts. Consequently this method should not be entirely abandoned; but, more than in the past, it remains subject to the rule that it must be dissimulated from terrestrial and aerial view.

As for natural defensive points such as villages and woods, they have the disadvantage of being most obvious objects for enemy artillery fire. No longer can we make them the framework of positions of resistance as easily as we formerly did.

Such are the three tendencies toward which the infantry is at present orienting itself under pressure of the development of artillery and infantry means of fire. First, it is substituting for the old elbow to elbow line of firers a formation composed of powerful fire elements, widely spaced and echeloned in depth -- capable of common action, but with small degree of mutual dependence and relatively independent. It is the end of the evolution commenced a century ago and which has progressively substituted for the ancient three rank formation first the formation in skirmishers, then the present-day dispersion.

Secondly, when the terrain allows the making of this dispersion, it is the diminution of the importance of direct flanking of the first line and of the natural defensive point. But there is a close connection between the different elements of this system; and if for reasons connected with the terrain, for example, we come back to a linear disposition, the importance of flanking action and the strong point reappear.

Thus, in reality, the last two of these characteristics are conditioned by the first. The tendency for the infantry to echelon itself in depth to escape the crushing effects of fire is, in the last analysis, the preponderant tendency of the present day.

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DEPTH OF THE INFANTRY DISPOSITIONS(Sketch No.10)

At this moment we are not obliged to examine into the details of the infantry dispositions; we wish only to try to estimate the depth of the zone in which it will be placed.

Two cases are to be considered: either the infantry will place itself so that all its arms may participate in a single barrage in front of the first line; or else it will adopt the plan of presenting barrages of successive fires to the enemy.

In the second case, the depth of the infantry dispositions may be considered as unlimited. But this dispersion in depth can be realized only at the expense of the density of the barrier of fires. Without speaking of the greater difficulty of combining artillery and infantry fires in a system of successive positions that are very close together, it is evident that if a given unit splits up its efforts into two or three successive resistances it can, at each position, develop only the half or the third of the fire of which it is capable. So this solution, if not to be set aside, at least is to be considered as exceptional. It is a make-shift to be used only when we cannot do otherwise.

In the first case -- which the Regulations for the use of Large Units consider the normal one -- the depth of the infantry dispositions is limited by the necessity of maintaining sufficient depth and sufficient density in the barrier of fire. On account of this, that zone, at the present day, can very little exceed 550 yards for light automatic weapons and from 1,100 to 1,650 yards for the heavy automatic weapons. It is these figures -- considered to be averages -- that we shall adopt as a point of departure for our later discussions.

PARTIAL INFANTRY RESERVES - THEIR ROLE.

The partial infantry reserves have for object: -- to

-- to provide against attrition of the infantry by relieving worn out units, an operation which generally is practicable only after combat; or,

-- to reestablish the continuity of the firing line in rear of the breach made in the position of resistance; or,

-- to retake ground that has been lost.

It is not possible to fix a maximum strength for the partial reserves force. It would seem, though, that with effectives corresponding to 50% of the effectives in first line, we should be able to guard against many dangers.

But if the strength of the defense is to depend on its barrier of fires, we must first put into line the effectives necessary to insure the integrity of the position of resistance. It is better to keep than to have to retake. In this case, the partial reserves are only the excess of the existing effectives over those required.

EMPLACEMENTS OF THE PARTIAL INFANTRY RESERVES.

The emplacements of the partial reserves depend on the role they may have to play. They should be ready to go to work from the commencement of the attack. The irruption of the enemy across the position of resistance will, in fact, be very rapid, or else it will fail. We must be ready to guard against the first of these eventualities.

In a theoretical disposition, and if we cannot forecast that one point is threatened more than another, the reserves should be spread out behind the line of resistance uniformly along the front.

But if study of the terrain has been made with all the care desirable, this study will reveal weak, or particularly dangerous points. It is in rear of these points that we shall place the partial reserves.

ARTILLERY DISPOSITIONS

The rule of echeloning in depth has been forced upon the artillery for the same reason as for the infantry, and during the war we have seen this echeloning attain dimensions that we should never have anticipated in 1914.

The multiplicity of calibers and the perfecting of technical means of observation and liaison give great flexibility to the dispositions. However, the locations of its forward and rear limits are, as regards the position of resistance itself, limited by two considerations.

The forward limit should be far enough back so that a simple rupture of the position of resistance will not, of itself, necessitate the displacement of a large number of batteries. From this we may conclude that the greater part of the batteries should be placed beyond the effective range of the infantry fires of an adversary who might have succeeded in reaching the rear limit of the infantry position -- which, in ground void of cover, would mean a security distance of about 1,650 to 2,200 yards, or, say, 2,750 to 3,300 yards behind the infantry line.

On the other hand, all the artillery must participate, under good conditions of range, in forming the combined barrage of infantry and artillery. Under present conditions, as it is a case of executing fires of quite great precision near friendly infantry, this is practicable only if the artillery of direct support is not more than 6,600 yards from the forward limit of the infantry position.

Thus, in a theoretical disposition, the zones of emplacement of the artillery of direct support might be 4,400 yards in depth and its forward limit might be at about 2,200 yards from the forward limit of the infantry position.

The artillery designated for counter battery or distant interdiction is not subject to the same necessities. Nevertheless, it must, under good conditions, be able to fire on the probable zones of emplacements of the enemy batteries, which will, in the greater number of cases, be placed in the zone of the supporting artillery.

PARCELLING OUT OF THE ARTILLERY

The constituting of reserves of artillery (properly so called) has long been abandoned in the Division and Corps echelons, on account of the ranges of guns and the ease with which they can very rapidly make their effect felt at different points.

But if we have given up keeping out reserves of artillery, we have, nevertheless, desired to keep part of the artillery at the disposition of the command.

Upon what basis shall we work out the distribution of the artillery?

First it seems necessary to proceed as we have done for the infantry, that is to say, assure the desired density in the ~~zone~~ of combined fires. But, if we applied this rule literally; we would often be obliged to devote all the artillery to the direct support of the infantry.

Now we must remember that we organize the command for the complete duration of the combat. It may happen that the enemy makesmore progress at one point than at another and that it will be necessary to come to the help of one portion of the infantry. This requires that we be able to change the fires of a certain part of the artillery from one place to another.

Conversely, we must admit that the fires thus rapidly changed must be placed at certain distances in front of the infantry (our infantry --Tr.). Therefore we must leave with each infantry unit a minimum of artillery of direct support.

The necessity of reserving to ourselves (the command --Tr.) a part of the artillery for support of the whole, will not always allow us, even on a normal front of action, to devote as much artillery as we wish toemissions of immediate support of the infantry. We must, then, combine the infantry and artillery fires (See following: influence of the front of action) so as to remedy the insufficiency of the artillery support.

COMBINED DISPOSITIONS FOR DEFENSE. (Sketch No 10)

The combined dispositions of artillery and infantry, laid out on a level terrain, would give about the following working drawing:

A zone of distant artillery fires of relatively feeble density;

A zone of averagely distant artillery fires, having a depth of about 4,400 yards, and of great density;

A zone of mixed fires of artillery and infantry of about 1,100 yards;

A zone of infantry emplacements of 1,100 yards to 1,650 yards.

An intermediate zone of 1,100 to 1,650 yards, constituting a margin of security for the artillery.

The zone of artillery emplacements, from 3,300 to 7,700 yards in depth.

PLANS FOR FIRES.

Since the organization of fire is the principal means of action of the defensive, calculating and organizing the plans for fires will be the principle role of the command.

According to our Regulations, the plans of fires to be organized will be:

1 -- distant stopping fires, if the enemy has been stopped at a considerable distance from the infantry position.

2 -- counteroffensive preparation fires, if the enemy has succeeded in coming up close.

3 -- combined stopping fires (both infantry and artillery -- Tr) in front of the principal position.

4 -- fires in the interior of the position.

5 -- stopping fires upon the rear edge of the principal position (covering the artillery).

In a prepared defense, these various plans are made up in advance. From the command's point of view, the most important ones to be settled upon are those which characteristically concern the whole command, that is to say, numbers 3 and 5.

The role of the artillery "in general support" during the progress of the attack has also to be decided upon.

The complete organization of these plans rests partly on the probable development of the attack. Consequently we shall have to return to it in the chapter on defensive combat.

/imdr
11-26-24

INFLUENCE OF TERRAIN.

Let us now try to apply our rough outline of dispositions to terrains that are markedly different, for example, terrain with wide undulations (Sketch No. 5), terrain that has cover, but which is cut up into compartments (Sketch No 6), terrain of marked relief having large covered zones (Sketch No 7) and finally, terrain that is covered and cut up (Sketch No 8).

On each of these sketches we have taken as base the forward limit of the infantry emplacements "II" and the covering line of the artillery emplacements "SS". Then we have traced successive bands corresponding to:

-- the zone of combined artillery and infantry fires "CCHH";

-- the zone of infantry emplacements "IIMM" in which it is possible to act either by direct or flanking fires in the zone of combined fires;

-- and finally, to the parts of the exterior zone of artillery fires that can be seen from the terrestrial observation posts of the defense.

We at once note that we have not been able to make our application without more or less modification.

The zone of artillery fires is found to be divided into two very irregular bands: a portion visible from the ground observation posts of the defense in which the fire may be relied upon; a portion invisible to the ground observation posts of the defense in which, of necessity, the results of fire will be doubtful.

The zone of combined fires can attain the theoretical depth only if the terrain under consideration has no mask, no dead angle for a depth of 1,100 yards in front of the forward limit of the infantry position. This is generally the case in uncovered terrain with large undulations. But in terrain that has compartments or that is covered, it is not rare to come across marked narrowings of the zone of fires. Naturally, these narrowings constitute critical points if they result in reducing the infantry field of fire below 550 yards. We must, in this case, try to correct this disadvantage by changing the forward limit of the infantry. If not, we shall endeavor to prop up these weak points, either by insuring a greater density of fire at these points, or by organizing successive resistances in rear.

In order to be theoretically perfect, the zone of infantry emplacements should be invisible from the ground observation posts of the enemy and have a depth of 1,100 to 1,320 yards that can be completely utilized, that is to say, that allows convergence of all the fires in front of the forward edge. These two conditions are rarely fulfilled. However, as the very object of dispersion in depth is to shield the infantry from enemy artillery fire, it would, if absolutely necessary, suffice if one of the two conditions were fulfilled.

/imdr
12-1-24

If we turn to our sketches, we shall note that the solving of the problem is generally possible on terrain with large undulations, that it is rarely possible on terrain that has many compartments and that it is almost never possible on covered terrain. As in the case of the barrier of combined fires, we find more or less pronounced narrow places and sometimes even the zone is reduced to a line. Here again must we seek to guard against these disadvantages, because if only part of the infantry can fire, its fire will not be sufficiently dense. We may, up to a certain point, consider the width of the band that can be really used as giving the measure of the real density of the infantry fire.

To increase this density, it is true that we can bring forward all the infantry toward its forward limit. But by doing this we increase its vulnerability and this solution is acceptable only in those parts of the terrain that cannot be observed thoroughly by the enemy artillery. Or, again, we could change the zones or organize successive resistances. Also, in many cases, close examination of the terrain will suggest other solutions. Sometimes we cannot avoid the adoption of a purely linear system. In this case, the pure defensive does not suffice and we must come back to a combination of fire and movement.

Whatever may be the solution, the essential thing, at the beginning, is to thoroughly understand the difficulty by which we are confronted, so as not to content ourselves with words only, but to make a "made to order" solution. We must get down to estimating the quality of the infantry fire at its real value and not speculate on its theoretical value. Moreover, this is not very difficult. At first sight it may appear complicated, but after a few carefully done exercises, a simple glance on the map or the terrain will be sufficient to judge the real value of the fires of a position of resistance.

As regards the zone of emplacement of the artillery, the firing methods of this arm free it of the obligations that we have noted are imposed on the infantry. It is necessary, however, that this zone be quite deep so that the batteries may find easily accessible positions in it -- positions such that there are no dead angles of great importance and that the guns are shielded, first, from ground observation, secondly, from aerial observation. The terrain will of course be more or less rich in favorable positions and so we will be brought, to a certain extent, to draw in or open out the zone of battery positions.

LINEAR DEFENSE OR DEEP DEFENSE.

In the examples given, we see that whatever may be the disadvantages of the linear defense, the terrain may, nevertheless, impose it either at certain points of the battle field or even along a large part of the front. (Sketches No 7 and No 8).

In this case, if we cannot move the position of resistance, we will assure the defense of the weak points by establishing successive lines of fires destined to replace the first if this latter be forced by the enemy.

In this same situation, the improvement of small natural defensive points and the creation of artificial islands of resistance may also be of great service. As far as that goes, we must not forget that here we are on covered terrain and that on this terrain, defensive points are easily dissimulated from aerial observation.

Thus, the defense will finally be a combination of deep fire positions, of defensive points and of lines properly so called, the two latter methods constituting a sort of make shift to be used only when the terrain demands it (1).

CHOICE OF A POSITION OF RESISTANCE.

For a unit of all arms, the basic element of a defensive position is a line of observation posts that enables the artillery to see where its shells strike.

The battlefield is astraddle this line of observation posts. In front is the infantry position, in rear, the position of the artillery.

The infantry line of combat may occupy various locations between the chosen line of observation posts and the one in front of it. (the chosen line -- Tr.) On Sketch No. 11 we have placed the different possible solutions depending on whether the forward limit of the infantry is placed on the reverse slope, near the valley, at the military crest or at the topographical crest. Each displacement brings in its train a parallel displacement of the different zones that constitute the resistance dispositions.

The solution which appears the most advantageous, when the situation permits, consists in putting the infantry astraddle the valley, so as to arrange in front of it a sufficient zone of fires, without, however, putting it too much in view of the enemy artillery.

This requires, however, that there be sufficient distance between the two crests -- say from 3,300 yards to

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(1) Here, it should be well understood, it is a question of echeloning in depth in the interior of the same position of resistance. We shall see, later on, that we would weaken ourselves seriously if we extended the line of reasoning to echeloning upon two successive positions.

/imdr
12-1-24

5,500 yards -- so that each element of the system may have the desired depth. Where the movements of the terrain are more closely drawn together, we shall not be able to find the depth desired.

We may say, then, that the interval that separates two lines of observation posts is an important element of the value of a position and must be taken into consideration when we are master of the choice of our position of resistance.

For example, Sketch No. 9, upon which we have traced a certain number of lines of observation posts: AA, BB, CC, etc.........

The position AA (which corresponds to the interval separating the two lines of observation posts, EE, AA) shows very well the desired depth; however, it will be difficult to organize in its southern part, because there there are penetrating valleys and the terrain presents many dead angles.

The position BB (AABB interval) has a depth of only 1,650 to 2,200 yards.

The position CC 1 has very suitable depth; but in its southern part it has two lines in front of it which seriously limit the view from the main crest. Moreover, the trace of the line has a marked bend near Bernes.

The position CC 2, which shows none of the disadvantages noted up to the present, appears to be the one that will permit the organization of the best system of fires.

The position DD has only a quite shallow zone in front of it. In the northern part, also, the crests follow a penetrating direction, etc.........

In making this examination, it is of course understood that we trace, in thought, in front of each line, the different zones that constitute the resistance disposition. Making this reservation, we see that considering the lines of observation posts allows us to take a general view of a given terrain, and determine on it, quickly enough, the most advantageous trace for a position of resistance.

/imdr
12-1-24

INFLUENCE OF THE FRONT OF ACTION

We have seen that in order to occupy a front in what may be termed "normal" fashion we must have (on condition that they be able to develop all their fires) one battalion of infantry and one and one-half battalions of artillery per 1,100 yards (counter-battery not included)

If we apply these basic quantities to a division of infantry, for example, we shall conclude that the defense of a front of 4,400 yards would absorb 4 battalions of infantry and six battalions of artillery of direct support; this is half of the infantry, but all of the artillery, of the division.

If the front is narrower, there is no difficulty. We can, if we wish, close in slightly the disposition of the infantry and we shall be able to increase the density of the artillery fires.

The problem becomes difficult only if we wish to increase the front of the division.

Suppose, for example, that the front given to the division reaches 6,600 yards.

There is still enough infantry to provide for this front but there is not enough artillery.

Two solutions are possible:-- either extend and spread out uniformly the artillery barrages, exposing ourselves to the danger of being weak everywhere-- or else accept that there be "holes" in the artillery barrage. This latter solution is more honest and straightforward- it allows us to see where we are headed.

Where are these breaks to be placed? The terrain will show where.

We have already noted that, on given terrain, the trace of the infantry line could have strong places and weak places. But if we go into the details of the infantry dispositions and if, in particular, we consider the arrangement of flanking and cross fires, we shall nearly always find large zones which can be beaten by cross fires of well sheltered machine guns. Such zones can take care of themselves. In a way, these zones constitute curtains (courtines) which the enemy can get to only after having mastered the adjacent bastions. It is in front of these curtains that we can economize on artillery fires.

We find many examples of the use of this method during the late war. To mention only one, it was by dispositions of this sort that the Germans broke up the first attack of the 6th Corps on Apri 16, 1917. The 6th Corps, starting from the front: Soupir--Mussy, was to attack the crest: les Grinons-- Croix Sans Tête. But at the beginning, the attack was stopped in the reentrant natural amphitheatres of the Cour Soupir and the Fme du Metz by flanking actions of machine guns hidden in the natural bastions of the Bois des Grinons and of the Bois de la Bovette (Sketches No. 55 and 56).

The experiences of 1918 show that in face of a powerful attack we can little expect a serious resistance when the fronts of the divisions in line are greater than 6,600 yards. If we will turn back to Sketch No 12, which shows the fronts of the French divisions in line on May 27th, June 9th and July 15th, we see that on May 27th, two divisions, the 61st and the 22d, each had a front of nearly 13,200 yards. On the contrary, on June 9th and on July 15th, the fronts were not greater than 6,600 yards per division.

However, the fact that a front occupied by the same strength in effectives gave way on June 9th whereas it held on July 15th, requires an explanation. The explanation is found in Sketch No 13, which gives the detailed dispositions of two divisions- one in the 3d Army on June 9th, the other in the 4th Army on July 15th. It is easy to see that the first, echeloned on two positions with considerable distance between them, fought two distinct fights with one half its effectives in each fight. For this division, from the infantry point of view, it was as if it had been obliged to fight on double its front.

So, when we speak of front in the defensive, it must always be understood that we mean units which have gathered together their means upon a single position of resistance. The figures we have given are no longer valid if we have in mind the defense of two successive positions.

If the front of action continues to extend itself, we reach a moment when the infantry effectives themselves become insufficient. From this moment on we can put up a defense of only limited duration, if we find ourselves confronted by an enemy having at his disposal the means necessary to execute a serious attack. Such, for example, is the situation of troops acting as a covering force, which troops are obliged to "hang curtains" along wide fronts-- a problem we shall take up later (Chapter IV).

The above calculations of fronts have been made on the supposition that the division had only its organic means at its disposal. If it is reinforced in artillery, the front which it can defend extends proportionally. However, with the value of two divisional artilleries, we approach the maximum front, because in combat, the division cannot place all its infantry on the principal position. It must still take from its infantry effectives covering units and partial reserves.

INFLUENCE OF THE PROXIMITY OF THE ENEMY

The above given quantities are valid only if the enemy has been kept at least at the exterior edge of the barrier of fires. If he has succeeded in approaching closer, under cover of night or by means of field works (i.e. trench systems--Tr.), a fresh problem appears -- that of the maintenance or the changing of the position of resistance. Here we shall mention it only; we shall take it up later.

III. ORGANIZATION OF THE BATTLEFIELD

ORGANIZATION OF OBSERVATION

The enormous extension of battlefields in width and particularly in depth, the skilfulness of troops in defilading themselves on the battlefield and the necessity of proper utilization of projectiles, demand a watch over the battlefield that is permanent and as active as possible. This matter made much progress during the war for it concerns in the highest degree the conduct of combat.

The material means at our disposal for this purpose are:

The information service of the infantry and of the command; observation posts and listening posts.

The special information service of the artillery; the special observation posts of the Flash and Sound **Ranging** battalion (S.R.O.T.) (S.R.S.)

Antiaircraft sentry posts.

Balloons

Air service

Without going into the details of this organization, it will be sufficient , at this point, to stress the importance of terrestrial observation, from which comes the necessity:

1st - of sheltering the observers against the fire of enemy artillery;

2d - of organizing as complete as possible a system of transmissions so as to assure easy and full use of all the means of observation and information.

ANTIAIRCRAFT DEFENSE

During the war, antiaircraft defense was organized by the Army. It comprised:

-- machine gun units for defense of the front lines against low flying airplanes, as well as for the protection of balloons and sensitive points in the rear;

-- semi-stationary sections of 75 mm guns for use against airplanes registering for the enemy artillery;

-- mobile units of 75 mm automatic guns for use in reinforcing the action of the stationary units;

-- and finally, a special observation service and telephone system enabling us to follow enemy airplanes and to coordinate the means put into action against them.

Defense organized in this manner is territorial defense. We could decentralize it and, for example, put units of the antiaircraft defense at the disposal of corps; but the principal role of the Antiaircraft Defense appears to be the covering of aerial observation (See Chapter VII).

In consequence, the small units of infantry and of artillery should be equipped to defend themselves against the attacks of airplane.

DEFENSE AGAINST TANKS

Defense against tanks is a new problem for us in the sense that it was not put up to us seriously in 1918. But from now on it must receive our consideration.

During the war we had recourse to installing semi-stationary anti-tank batteries. We also provided against tanks by passive obstacles intended to stop them or to canalize their advance toward zones well beaten by the fire of our guns. Following out the same order of ideas, the Germans, in 1918, employed mine-fields at certain points which were, moreover, of great use to them.

Another solution will no doubt be that of cruising tanks, intended more especially for the struggle against enemy tanks.

Without disparaging these means-- of which we will make use every time that we can-- it remains indispensable that the infantry and the artillery be made competent to defend themselves against tanks by their own efforts. This requires armaments and tactics.

The arm to be employed against the tanks is the gun. Against the present light tank it would seem that the 37 mm gun suffices. If that be true, the 37 mm has a place in the defensive which it just fits.

Perhaps machine guns similar to the special type which has just been adopted by the Germans would also do. Possibly we shall have to call for a gun more powerful than the 37 mm gun.

Be this as it may, the three 37 mm guns at the disposal of an infantry regiment would not be sufficient to oppose a tank attack. Here is a problem in organization that requires solving. If we do not solve it, we must resign ourselves to drawing upon the light artillery.

In the second place, we must have special tactics against tanks.

At the present time we may have to do with three varieties of tanks:

-- the light tank, working for the infantry;

-- the heavy, or rupturing tank, which can be employed singly;

-- a tank of high speed and long radius of action, which is the tank of the future but which does not yet exist.

The light tank works for the immediate benefit of the infantry. This places two obligations upon it. First, it must not get too far away from its infantry, and, if its infantry does not follow it, it must return to the rear to look for it. (i.e., its infantry- Tr). Second, it must attack the machine guns that annoy the march of its infantry.

On these two obligations, it seems that we can base a special tactics which will be valid so long as the attack does not change its solution (i.e., its -- the attack's -- general scheme-- Tr.)

1st - By endeavoring to stop the infantry following the tanks (by fires of artillery or distant machine gun fire), we will oblige the tanks themselves to stop or to return to the rear. It will be sufficient to combine this action so that these comings and goings take place within range, and well visible to, our antitank guns.

2d.- The tank is obliged to advance against a machine gun that is dangerous to its infantry. Certain machine guns, then, may play the part of a bait intended to attract the tank under the fire of a well -placed anti-tank gun.

In order that this fight against tanks be not too loosely tied together, it will be necessary to trace on the position of resistance itself a line or a zone in which the fight against the tank shall be foreseen and organized.

This zone intended for antitank combat must be chosen carefully. It is essential, in particular, that it be invisible to enemy observation posts, which will generally oblige us to place it on the reverse slope.

As to the heavy tanks, they also will work for the benefit of the infantry, and what we have just said applies to them; or, following out a new conception, they will have the mission of rapidly crossing the position of resistance in order to directly attack the enemy batteries.

It would seem that the gun is big enough to defend itself against the tank provided it be not surprised. In this case, tactics would therefore consist of establishing a system of sentries in front of the artillery, equipped with signals for giving warning of the approach of tanks and pointing out the route they are following.

FORTIFICATION

We ask fortification:

-- to improve, or secure, flanking action and ability to see;

-- to improve, or make, obstacles and cover.

As regards flanking action and observation posts, the duty of fortification is to so arrange that they can function at all times-- which is to say, place them in protected shelters, constructed on the spot or brought up ready made.

The object of obstacles is to stop the assailant under the fire of the defender.

Barbed wire is the best obstacle against enemy infantrymen. But the barbed wire entanglement rises to its full value only when it has been traced as a function of the plan of fires. Here again the development of automatic arms has imposed a change of method.

At the opening of the war, we commenced by drawing the trench which, at that moment, was the essential organ of fire; then we protected it by a band of barbed-wire; after that, we placed our automatic arms so as to cover the band of wire by oblique fire. This procedure was logical, since it was the trench that produced the greatest quantity of fires.

But in a system in which fire will be produced primarily by automatic arms, it is these latter which we must locate first. We can afterward adjust the accessory defenses to the system of fires instead of, as in the past, adjust the system of automatic arms fires to the trace of the accessory defenses.

If use of the tank is generalized, or increased, the wire entanglement will lose part of its importance. It will, nevertheless, have great value as long as the tank shall act in close collaboration with the infantry. It will always be worthwhile giving the wire system a more irregular, more changing, more partitioned trace, so as to limit the consequences of any passages that the tanks may open in them.

Against the tank itself there are few practical artificial obstacles which we can make. This is a new problem for field fortification to solve.

On the battlefield, cover is secured in two ways, by shelters and by trenches (trenches and communication trenches)

The necessity for shelter has not lessened; but we have been obliged to give up attempting to secure absolute protection, which led us to dig deeper and deeper into the earth or to construct regular concrete forts. In a new organization we may content ourselves with shelter protecting us against medium calibers, particularly if we succeed in hiding them from view of the enemy.

In reality, the gun is very dangerous only against objects that are seen. During the war, practice in hiding things from view gave birth to the camouflage industry. Despite criticisms which it has raised, camouflage has rendered real services. It is to be hoped that we keep up its practice in our peace time maneuvers.

In former times the trench constituted the principal shelter. As an emplacement for fire it has lost much of its importance. Along with the communication trench it is still useful as a means of communication for the daily life of the sector. It is advantageous to have its profile show as little relief as possible , for the bands of earth running along the trench too often form an obstacle to the fire of machine guns and constitute protection for the assailant. This same remark, of course, applies to communication trenches.

THE REAR PORTIONS OF THE BATTLEFIELD

The organization of a position of resistance does not comprise only the disposition on the terrain of the fire elements intended to stop the enemy. These elements must be resupplied with rations, ammunition and engineer material; evacuation must be provided for; then, a good organization of communications and liaisons must give life to this body composed of complex and disparate elements. All of these elements must be taken into considerations in the plan for organization of the terrain and during the progressive realization of this plan.

The rear portions of the battle field must take in:

-- the executive organs of the various services;

-- the available troops to be kept in proximity to the front, and the shelters (bivouacs, camps and cantonments) to be arranged for them;

-- the echelons of the batteries;

-- the trains of the troop units in sector;

-- the command post and the headquarters

Once all these elements are put in place, the role of the command is:

-- to put into connection the units which have to work together: liaison and transmissions;

-- to organize, and render possible, their movements; communications and circulation;

-- to assure most efficacious police supervision in all of this zone in which people are rather left to their own devices, and to isolate this zone from the field of battle on the day of combat.

For these various things, we refer to Practical Notes on Staff work (Notes pratiques sur les services d' Etat- Major)

IV. - THE PLAN OF DEFENSE OF THE PRINCIPAL POSITION

THE DIVISION

Although the given quantities which we have just studied are not sufficient to enable us to block out a complete plan of defense, it is nevertheless useful to try to arrange, in order, the conclusion in this chapter.

Our object at this juncture, moreoever, is less that of giving a complete plan than that of stressing the points which the command should particularly bear in mind.

MISSION OF THE DIVISION

The Division (with divisions abreast of it) habitually receives a statement of the general position of resistance and the approximate trace of the infantry position.

The mission of the Division is to devote all its means to holding the principal position itself.

EXAMINATION OF THE SITUATION

This examination, we have said, bears upon the means of action, the terrain and the enemy.

1st-- Means of action. By comparing them with the front of action we deduce whether the front is wide, narrow or normal.

2d -- the terrain.

Locate the position of resistance of the Division with respect to the preceding and the following positions. Mark the successive lines of observation posts.

Then look for and set down the zones of fires, the zone of infantry emplacements and the forward limit of the artillery position. Note the weak points of the front.

3d - The enemy. For the moment the sole useful information of the enemy is the location of his advanced line and the space it leaves for the barrier of combined fires.

THE COMBINED DECISIONS

It bears upon:

-- the infantry effectives for the fighting line;

-- the trace of the position;

-- the successive acts of the defense;

-- the degree of centralization of command.

1st -- the infantry effectives for the fighting line.

The effectives for the fighting line may generally be calculated at the rate of one battalion per 1,100 yards. These effectives may be increased if the barrier of fires does not have the desired depth.

The detailed arrangement of the above will generally be made by the commander of the divisional infantry.

2d -- Trace of the position.

If the terrain and his mission allow several solutions, the Division Commander decides on the solution he prefers.

3d -- Successive acts of the defense.

Counteroffensive preparation (See Chapter VI).

Defense of the forward limit of the infantry. Strong points to be constituted on the front. Zones which the infantry must defend by its own means.

Interior defense of the infantry position. Defensive points to be particularly strongly held if necessary.

Eventual protection of the artillery. Shall this protection be given by the garrisons of the infantry position or by the reserves?

4th-- Degree of centralization of command.

This is simply a question of determining if the whole of the front is mutually dependent, or whether the Division Comander shall cut it up into a certain number of sectors, each having its infantry and artillery-- or, in other words, determining whether the combination of infantry and artillery shall be made at the Division echelon or at a lower echelon.

Except on terrain having much cover, and on extended fronts, the first solution habitually imposes itself.

DISTRIBUTION OF THE MISSIONS AND THE MEANS

1st -- Zones of action.

Once the distribution of the battalions is roughly made, the trace of the regimental zones is made so as to insure exercise of command under the best possible conditions.

We take into consideration the sectors of the terrain and the necessity of insuring unity of command throughout the entire depth of the position, including , if necessary, protection of the artillery.

2d -- Plans of combined fires.

To each one of the successive acts of the defense corresponds a special plan of fires.

The detailed getting up of these plans is done by the Colonel Commanding the artillery, in furtherance of the indications given in the combined decision. The adjusting of the fires of direct support to the infantry emplacements is done by an understanding directly between the artillery and the infantry.

When there is chance that the artillery means are insufficient to execute all the missions at once, the Division Commander must fix the priority of the different missions.

When the plans of fires have been roughly blocked out, we can, after comparing them, decide , in accordance with them, on dividing the artillery into artillery "in direct support" and artillery "in general support."

3d -- Mutual support of adjacent regiments.

This matter is habitually settled by the Commander of the fighting line.

4th -- Place and role of the reserves.

The reserves may be intended for either "sedimentation" (colmatage) or for counterattacks.

When the reserves are weak, the first condition to fulfill is to maintain continuity of the front and covering of the artillery. They make preparations in accordance with these duties.

V. PLAN OF DEFENSE OF THE PRINCIPAL POSITION

THE CORPS

THE MISSION

According to the Regulations for the conduct of Large Units, the Corps, like the Division, devotes itself in entirety to the defense of the position of resistance. Therefore, in the absence of formal instructions, dispositions to be taken to insure resistance in rear of the principal position are the concern of the Army and must, should the case arise, be the duty of special troops. The corps does not need to concern itself about it.

The position of resistance is fixed more or less exactly by the Army Commander. Outside of periods of stabilization it is generally defined, at the Army echelon, by the line of observation posts that must constitute its framework.

THE SITUATION

The study of the situation is made as has been shown for the Division.

If we have choice of several lines of observation posts, each of them must be made the subject of a separate study.

THE COMBINED DECISION

1st -- Distribution of the effectives.

The effectives in line must be sufficient to furnish the position of resistance. On the greater part of terrain, we are very well fixed if we have one division for 4,400 yards of front and well fixed enough if we have one division for 6,600 yards front . Habitually, we are short on artillery. So, while the corps, after furnishing its front (with infantry-- Tr.) can sometimes keep in reserve the infantry of one division, it is generally obliged to call upon all the artillery at its disposal.

2d.-- Trace of the position.

The corps commander fixes the general trace of the infantry position (marked out by a certain number of points picked out in the interior of this position) and it is often desirable that he fix the forward limit of the artillery position, for the choice of that limit may play an important part in the evolution of the combat.

If the front is particularly widely extended, it will be well to constitute one or two particularly strong areas in it, so as to limit the width of the advance of the enemy should he succeed in penetrating the position of resistance. The choice of these areas is generally made as a function of counterattack projects. It will be discussed later on.

3d.-- Successive acts of the defense.

Defense of the infantry position is the affair of the first line divisions. The Corps Commander will keep in touch with the combat but, habitually, he will intervene only in case of rupture of the infantry position. From the point of view of resistance, therefore, the combat will comprise two principal acts for the Corps: defense of the infantry position, maintenance of the artillery position.

4th -- Centralization.

Coordination of efforts is insured by the trace of the position of resistance.

The conduct of combat is decentralized by division. But as it is not certain that the enemy will attack all along the front at once, the Corps Commander may desire to employ the artillery at his disposition to help first one division, later, perhaps another division. Therefore he may be induced to attach to the corps artillery a part of the reinforcing artillery placed at his disposition, the rest being attached to the divisional artillery. He then gives to the Corps artillery commander the mission of eventually reinforcing, under particular conditions, the fire of this, or that, division

DISTRIBUTION OF MISSIONS AND MEANS

1st-- Zones of action.

The zones of action are calculated according to the effort to be demanded of each division and the importance that the Corps Commander attaches to the holding of the terrain they occupy.

The forward part of the zone of action is fixed as a function of the combat requirements. In the rear portion, facilities for circulation must be taken into consideration, but this is, above all, a staff problem.

2d -- Plans of fires.

The plans of fire are made out by the Division Commanders and by the General commanding the artillery. It is sufficient for the corps commander to fix the contingencies concerning the support of the front line divisions by the corps artillery.

Besides the plans of fires prepared in view of a general attack, it is customary to arrange other plans to be used in case the enemy makes only a partial attack. These latter plans are coordinated by the General commanding the artillery and made out following, and depending on, the hypotheses determined by the Corps Commander.

3d -- supplementary means to be given to subordinate units.

These additional means are chiefly artillery means.

We must, as far as we can, give each division what it needs in order to insure its barrier of fires, due consideration being given the assistance furnished by the infantry fires.

4th-- Mutual support of adjacent divisions.

The mutual support of divisions in line often results from the trace of the principal position, from the trace of the zones of action and, if necessary, from the constituting of strong points on the limiting line, of the the zones of two adjacent divisions. Also, we often impose on each division the obligation of having part of its artillery ready to support adjacent divisions. But this prescription is efficacious only if the contingencies of intervention have been fixed in advance, and everything arranged in a plan of fire.

5th-- Reserves.

The plan of defense once made up, the use of the reserves is nearly the only means left the Corps Commander for intervening in the combat.

If the reserves comprise only a few battalions, they will very likely be scattered in rear of the divisional fronts-- preferably in rear of weak points-- and placed, when necessity arises, at the disposal of the Division Commanders.

If these reserves are larger, we may anticipate their use in counterattack, as we shall see later on.

CHAPTER III.

ATTACK OF A POSITION OF RESISTANCE.

I. -- THE PROBLEM.

As we did for the defense, it appears to us to be necessary to study the elementary act of the attack before commencing a chronological description of offensive combat.

In this chapter we shall go into the attack of a position organized as has been described in the preceding chapter and well defended. First, we have to consider what the dispositions for attack should be; after that we shall examine into the role of the command.

OBSTACLES TO BE OVERCOME.

We have just seen what a modern defensive position is. We have been able to note that, in order to reach the vitals of the defense, we must upset its artillery system. As long as that objective is not attained, we have but reached for our result; taking the terrain occupied by his artillery, capturing the latter, if possible, constitutes the material mark of success.

In order to arrive at this result, we must make an advance of several thousand yards into the zone of fires and the emplacements of the enemy. What are the obstacles to this advance? To note these, let us rapidly run over the series of successive obstacles that the defense will oppose to us.

First we meet the zone of distant fires of the enemy artillery. Several methods whereby we may advance present themselves: attempting to neutralize the enemy artillery -- a costly procedure -- or else diminish our vulnerability by advancing in zones defiladed from enemy ground observation and by thinning out our formations. At this time in fact, nothing obliges us to present dense lines or even united lines to the enemy. Sometimes we can use atmospheric conditions -- night, or fog. These methods will usually be sufficient to bring us near the exterior edge of what we have called the barrier of combined fires.

After this, we must cross:

-- the zone of the combined barrages
-- the zone of infantry emplacements.

We now have to advance an infantry line strong enough to be able to develop powerful fire against the enemy infantry, pass around and mop up his islands of resistance, resist, and reply to his counterattacks. This is possible only if we have succeeded in silencing or at least neutralizing the enemy fire -- in a word, if we have gained superiority of fire.

It is very likely that enemy resistance will diminish in proportion as his infantry position wears away. But the difficulties begin to really lessen only when we break into the zone of his batteries. Up to this moment, we can advance only if we maintain superiority of fire.

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12-2-24

SUPERIORITY OF FIRE.

The fires of the defense are combined fires of infantry and artillery. We must gain superiority of fire over both.

We have seen that the infantry may be spread out more or less irregularly in a zone about 1,100 yards in depth. Against such small, dispersed targets, it is not possible to use precisely adjusted fire. The entire dangerous zone must be blinded. Such fire requires at least seven battalions of artillery per 1,100 yards of front, say, for example, the value of:

three battalions executing fires on the forward part of the zone, in the proportion of about 110 yards per battery;

two battalions executing fires on the rear part of the zone, in the proportion of about 165 yards per battery;

two battalions executing fires in the intermediate part of the zone.

The infantry means of fire may cooperate in this protection. We know that a machine gun company, using direct fire, (if the range does not exceed 2,200 yards) can neutralize a front of from 220 to 330 yards.

Such is the effort we must make in order to be nearly sure of gaining superiority over the direct fire of the enemy infantry.

We must also take flanking fires into consideration.

If the attack includes the entire enemy front, the enemy's flanking actions will be included in the direct fires; they will not require special means to take care of them.

But if the attack is to go in on only a part of the enemy front, we must cover our flanks by a disposition of fires analagous to those on our front and having, theoretically, (in uncovered terrain) the same width and the same depth. These protective barrages on the flanks will, naturally, take on more and more development in proportion to the distance of the advance.

Gaining superiority of fire over the enemy artillery is much more difficult. Here, we can give no consideration to firing on a zone. The zone to be covered is too large. We must specifically attack each group, each nest, of enemy batteries -- consequently we must know their emplacements. When we have this information, sufficient neutralization of the enemy artillery may generally be accomplished by using one-half a battery to counter-batter each enemy battery.

Basing our calculations still on the assumption of a normally defended enemy front, we have seen that we may expect to find there, everything included, 2 to 4 battalions per 1,100 yards. Therefore we shall require one or two additional battalions for counter-battery and missions of distant fire, and thus we arrive at a total of 9 to 10 battalions per 1,100 yards.

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12-3-24

The terrain, and the aid of tanks, may allow us to reduce these allotments a little; but they were nearly always required in 1918, on the fronts where we endeavored to effect rupture, as the following table shows:

ARTILLERY DENSITIES ATTAINED DURING THE ATTACKS EXECUTED IN 1918.

Operations	Corps	Fronts (yards)	Number of batteries			Number of batteries to 1,100 yards	Groups of heavy tanks
			Light	Heavy	Total		
Chateau Thierry-Soissons Counteroffensive 10th Army, 18th July	20th	6,600	69	45	114	19	14
	30th	4,400	54	36	90	22	3
Battle of Montdidier 1st Army, 8th August	31st	5,500	60	81	141	28	--
	35th	6,380	61	61	122	22	--
Battle of Champagne 4th Army, 28th Sept.	11th	4,730	63	56	119	28	--
	21st	4,500	63	54	117	29	--
-----------	2d	4,400	63	60	123	30	--
-----------	9th	3,630	63	60	123	36	--
Battle of Guise 1st Army, 4th November	36th	4,950	54	46	100	23	--

II. -- DISPOSITIONS FOR ATTACK

DISPOSITIONS OF THE INFANTRY

The dispositions of 1914 tended toward forming a line of skirmishers, advancing and firing, and followed by supports and reserves, the whole joining together at the last moment to make the assault in linear formations. The defenders, themselves, presented a continuous front and it would have been imprudent to meet him in too thin a formation.

The Manchurian war had already shown the necessity of increasing the intervals in the first line. This tendency did not fail to accentuate itself during the late war and the attack of today, like the defense, presents to us a first echelon spread out over a great depth. Since the defender himself has spread himself out, it is no longer necessary to oppose to him a front as dense as the one employed in the past. After the fire of the attack has passed over it, the resistances will be reduced to islands,

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12-3-24

to isolated elements; and it is by small maneuvers, by converging the efforts of adjacent groups, rather than by sudden attack, that we shall succeed in overcoming these islands of resistance. In the strict sense of the term, the attacking infantry is no longer a continuous line; it is a series of distinct groups, disposed in several echelons, and advancing in parallel toward the position to be taken.

What is the density and depth of this formation?

The experience of the late war has brought us to giving attack battalions fronts averaging from 440 to 660 yards. We may consider even higher figures, but it is wise not to count on more than 550 yards when we have in mind the attack of a strongly defended position.

On such a front, the battalion is usually formed in two lines. In this way, the depth of its dispositions is 440 to 550 yards. To simplify things, we may assume that a battalion moving to the attack covers a square nearly 550 yards on each side.

The first line is followed by partial reserves that are more or less echeloned. These partial reserves (second echelon or reinforcements) have as object the relieving of the front line units during combat. Their size varies considerably and should be calculated according to the difficulties which will be encountered by the front line and according to the depth to which the attack will be pushed. In attacks against fortified terrain, la Malmaison, for example, their size was as great as 100% of the effectives in front line. But the greater part of the time the strength of these supporting troops was about one battalion in second line for two battalions in front line.

These battalions move in rear of the attack troops at a distance which may vary from several hundred yards to 1,100 or 2,200 yards.

DISPOSITIONS OF THE ARTILLERY

It is desirable to have the artillery so disposed that it can support the attack as far as possible without having to displace its batteries. Here, consequently, echeloning in depth is no longer a means of facilitating the mission of the artillery, but simply a means of diminishing its vulnerability. Every advantage is to be gained by pushing the artillery as close as possible to the infantry line of departure.

On the other hand, the batteries that are to act in direct support of the infantry at the jump off, must not be placed too close to their first point of fall, lest they be unable to fire over the infantry.

From these considerations, it results that the greater part of the divisional artilleries is generally placed in a rectangle three or four thousand yards deep, whose forward limit is at about 1,100 to 1,650 yards from the line of departure of the infantry. The heavy artillery (A.L.L.--Tr.) is usually a little farther (from the line of departure -- Tr.)

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12-3-24

ENSEMBLE OF THE DISPOSITIONS FOR THE ATTACK OF A POSITION OF RESISTANCE

As we did for the defense, let us try to make a rough drawing of the attack, showing the fires of the dispositions and the dispositions themselves. We shall find (Sketch No. 14):

-- a zone of counterbattery able to reach up to 6,600 to 7,700 yards from the base of departure;

-- a zone of direct support fires (accompanying and protective fires) placed immediately in front of the infantry and of a depth of about 1,100 yards -- eventually extended by a zone of protective fires on each of the flanks;

-- a mobile zone, containing the attacking infantry, having a depth of about 550 yards;

-- another zone, also mobile, containing the battalions of the second echelon;

-- finally, a stationary zone corresponding to the artillery emplacements.

DISPLACEMENT OF THE ATTACK DISPOSITIONS.

The dispositions for attack are movement dispositions, but its displacement is subject to two important laws.

To begin with, liaison between the artillery fire and the leading infantry elements cannot be maintained for a very long time. This liaison is usually effected by following a pre-arranged time table. Now, experience shows that this time table goes to pieces quite rapidly. We have arrived at the conclusion that, on fortified terrain, a pause is necessary after an advance of 1,100 to 2,200 yards, in order to readjust the fires and permit the infantry to catch up with them.

Also, advance of the infantry is possible only on condition that superiority of fire is constantly maintained over the enemy. This requires that the artillery necessary to insure such superiority of fire remain in place while the infantry advances, as artillery in movement is unable to fire.

Against a strong enemy, therefore, we cannot consider a simultaneous advance of both infantry and the artillery charged with supporting this movement. The artillery must remain in position while the infantry advances and, reciprocally, the infantry must pause while the artillery is being displaced. From which arises the necessity of quite long pauses in the attack when the artillery arrives at the limit of its range, that is to say, when the attacker has advanced 4,400 to 5,500 yards.

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12-3-24

But support of the infantry by the artillery must not be completely lacking at any given moment. However, through what we have seen of the defensive, we know that halted infantry has less need of powerful artillery support than advancing infantry. This allows us to regulate artillery displacements while, at the same time, constantly maintaining a sufficient proportion in support of the infantry.

INFLUENCE OF THE TERRAIN.

We must now see how the first two variables of the situation -- the terrain and the front of action -- will influence the theoretical dispositions.

The terrain influences from a quadruple view point:

-- depths of the direct support and the protective fires;

-- width of the front taken in by the attack;

-- value of the artillery support;

-- pauses to be made in the attack.

Even when we are certain of meeting with serious resistance of the enemy, it generally is impossible to exactly identify the real position of resistance of his infantry, the more so as changes may be made in it at the last moment. We must attack as if the terrain were occupied throughout.

1st -- The direct support and protective fires in front of the infantry have for their object the neutralizing of the enemy infantry's means of fire. The depth to be given them depends, therefore, on the possible depth of the dispositions of this infantry. Now, in studying the defense, we have seen that this depth is quite variable. In places where the terrain is reduced to 330 to 560 yards etc..., for example, it would, at the start off, be quite useless to have greater depth in the direct support and protective fires. Thus, an attack having to force the defensive front shown in Sketch No 6 would, at the start-off, give but shallow depth to its fires on the front lying to the west of Rapsécourt. On the contrary, between the region of Rapsécourt and Branx-Saint-Remy, the fires should approach the theoretical depth.

In a given direction, moreover, it is rare to find the terrain perfectly flat for a long distance. It is divided, in the sense of its depth, into a certain number of compartments separated by successive crests. Next, the depth of each compartment is progressively reduced in proportion as the attack advances. Consequently, the supporting fires do not, in reality, show up as a rectangle displacing itself parallel to itself and undergoing no change of form. It covers a determined zone the depth of which diminishes until the fires, entering into the following zone, necessitate a fresh dilation in depth. The displacement of the zone of fire, therefore, is made by sudden extensions alternating with progressive contractions. (See Sketch No.20 on which we have indicated the compart-

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12-3-24

ments to be successively beaten by the artillery of troops attacking in the direction A B).

From all these frequently results the possibility of making savings of artillery and ammunition. In the most favorable cases, the quantity of artillery necessary could thus be reduced to three or four battalions per 1,100 yards, instead of seven battalions.

2d -- Width of front to be taken in by the attack.

Depending on its nature, the terrain is also more or less compartmented in the sense of its width. Each of these compartments must be entirely included in the attack. But if we attack only a given compartment, the protective fires on the flank do not have to extend beyond the limit of the compartment; and on this limit, a linear barrage is sufficient instead of the theoretically deep barrage.

See Sketch No 20 upon which has been marked the zone of protective fires on the flanks necessary for troops operating in the zone of action EFGH (if the adjacent troops are not abreast of them). In this particular case, we could do away with the heavy protective fires needed to the northwest of Villers-le-Sec, by bringing in the northern limit of the zone of attack to the line EE.

3d -- Value of the artillery support.

In the chapter of Part One relating to study of the terrain, we have shown that the efficacy of flat trajectory artillery fire diminishes to a marked extent when this fire is placed on descending slopes of the terrain. We have also said that liaison with the infantry is always easier to maintain in the zone visible to our ground observation posts -- this zone, by its own nature, including the areas which are poorly beaten by flat trajectory artillery.

Now the war has many times shown us that, for the same quantity of means put in line, the greater number of attacks made against reverse slope positions have failed, whereas the greater number of attacks made against ascending slopes have succeeded.

It was on ascending terrain, well visible from ground observation posts, that the big advances were made in the attack of 1915: in Artois, cote 140, northwest of Vimy; in Champagne, the Epine de Vedegrange, the Ferme de Navarin, the heights to the west of Tahure, the southern slope of the Main de Massiges -- it was these which were taken in a single rush, whereas the attack against the reverse slopes of the Butte du Mesnil did not succeed in debouching.

In February of 1916, at Verdun, (Sketch No. 17), the successive bounds of the Germans hooked on, each day, to a new crest of terrain, but without succeeding in passing it: the 23d, the Samogneux-Beaumont crest; the 24th, Champneuville, Mormont, les Chambrettes; the 25th, cote de Talou and Douaumont. The 28th, the Germans have the Cote du Poivre, but they have not yet succeeded in

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12-3-24

straightening out their front in the region of Haudromont. Their extreme advance, at the end of June, takes them, for a moment, to the Fleury crest; but a counterattack puts them back almost directly.

The phenomenon is not less perceptible on the left bank of the Meuse. The Germans do not debouch directly from the Cuisy-Bois des Forges crest; but we see them the 6th of March, utilizing their advance on the right bank, make a slanting attack (an attack "de biais" -- on the bias -- Tr.) on the crest of the Bois des Caurières and take in reverse our lines beyond the Ruisseau de Forges; then conquest of the ground is methodically taken up, always on the visible slopes; and finally the line hooks itself onto the summit of the Mort-Homme and of cote 304, where the two parties become immobile.

In 1917, our attacks in the region of Craonne (Sketch No. 15) which have to force the reverse slopes of the Ailette, do not succeed in debouching, whereas the left succeeds in progressively reducing the whole salient comprised between Braye and Laffaux.

In front of Moronvillers, the 17th April (Sketch No. 16) the heights of the Monts, which appear formidable, are taken at the first blow; but we do not succeed in getting past them -- luckily for us, moreover, if we may believe the "History of the 145th German Infantry".

> "The 1st Army (German) had put 10 regiments of infantry at the disposal of the 14th Corps to counterattack the enemy in case he should succeed in debouching from the line of the Monts, and to reoccupy the terrain the enemy might secure north of that line. The attack was to be executed in conformity with Sketch No. 16. The idea was perfectly correct. If its execution had been given to clever men, the enemy might have suffered a crushing defeat.
>
> "As a matter of fact, the adversary did not act in accordance with the (German -- Tr.) anticipations which had dictated preparation of this great counterattack. He (the French adversary -- Tr.) did not give the German command the pleasure of passing the line: Cornillet-Mont-Haut but contented himself with occupying the chain of heights."

The chance missed, the Germans, nevertheless, tried a direct offensive return. It did not succeed -- nor did the later attempts of both sides to debouch from the crest of the Monts.

We shall not stress this further. It would be easy to make the same observations on many other battlefields of 1916 and 1918.

/lkb
12-3-24

We do not go so far as to say that it is absolutely impossible to attack reverse slope positions. The example of la Malmaison, in particular, proves the contrary. But merely glancing at the map showing the deployment of the divisional artilleries (Sketch No. 53) shows the difficulty of the problem, and what a wealth of precautions, of calculations and of organizations were necessary to enfilade trenches too difficult to strike from in front and to adjust the trajectories of the shells to the configuration of the terrain.

From this importance of the field of view of the observation posts arises the importance of the observation posts themselves. So we may say that, up to a certain extent, the object of the attack is the successive conquest of the observation posts of the terrain.

It may happen that study of the terrain reveals zones invisible to direct observation extending along the entire front of action. Sometimes there is no remedy for this, particularly if we are considering narrow fronts. But, as we shall see in a moment, it is generally possible, by a partial action or, if need be, by a momentary bending of the direction of attack, to progressively secure the views (over enemy terrain -- Tr.) which we need.

4th -- The pauses to be made in the attack.

We have seen that these pauses result from two necessities:

-- necessity of readjusting the plans of artillery fires to the infantry dispositions;

-- necessity of alternating the displacements of the artillery and the displacements of the infantry.

The presence on the terrain of inclosed spaces, covering crests, observation points, obstacles of all sorts, allows us to locate exactly on the terrain the places at which it will be advantageous to pause; it also allows us to compare the difficulties opposing the advance of two adjacent units and to deduce therefrom the points at which it will be advisable to pause so as to permit the attack to join up laterally. Thus we can trace on the terrain a series of lines constituting, in a way, the halting places of the attack.

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12-3-24

PLAN OF CONQUEST OF THE TERRAIN

The successive halts of the different offensive which we have just examined were not always premeditated -- quite the contrary. The fact that these halts imposed themselves is only the more significant; it confirms the influence of the terrain and shows that we must consider the configuration of the ground, whether we will or no.

It is highly desirable to be able to foresee what we risk being unable to prevent.

To get at this, let us take up one Verdun Sketch and color in red the zone well observed by the German ground observation posts. We do not have to do this in great detail. It is sufficient to lay out on the terrain a series of red lines parallel to the direction of the attack (Sketch No. 17)

When this is done, and if we bear in mind that in addition the uncovered zones, the woods -- at least those situated on the ascending slopes-- generally constituted zones favorable to the progress of the German infantry, we see that, in general, the advance was made in the red colored zones.

Clearer still, perhaps, appears this influence of terrain upon the advance of the 6th Corps in the battle of April, 1917 (Sketch No. 55). The general direction of the attack was broken up as soon as the first objective was attained; the front moved on, draped itself to the configuration of the ground and ended by establishing itself nearly perpendicular to the line it should have gained, according to the initial plan of attack. No doubt the terrain was not the only cause of this; but it is difficult to overlook the part it played. Therefore, it would appear more simple to flex our plan of attack to the necessities so inexorably imposed on us. Let us try to apply the method to a specific case.

Let us suppose (Sketch No. 21) that troops have been given the mission of making an attack from west to east in the region of Surfontaine-- Villers- le-Sec. The hachures shown on the sketch bring out the zones of terrain successively visible to an observer moving toward the east. Now, to trace the steps most favorable to our advance. We first note that we should, without great difficulty, get as far as the line: Renansart-- Surfontaine--Villers--le-Sec-- Pleine Selve on condition that we take sufficient precautions in front of the Surfontaine "bowl." This done, we arrive at a quite large white zone. By applying the necessary fires to it we could try to debouch directly from the front: Renansart-- Surfontaine; but the interval is very narrow and we must expect delay in the advance in the interiors of the villages. We shall prefer attempting to take the terrain at an oblique, by advancing the right so as to surround the reverse slopes north of Renansart and try to capture zone 3. The operation will continue by the successive captures of zones 4, 5,6,7 , etc... picked out so to take obliquely the greater part of the reverse slopes which lie in the general direction of the attack.

Let us again look at the battlefield shown in Sketch No. 22. First we have to traverse a cut-up, wooded zone of which it is very difficult to obtain a view. Here we have an opportunity for small combined actions, but it is difficult, in this place, to organize a combined action of any size. Here the attacks will chiefly be a matter of the infantry's advancing along the wooded crests, for it would be inadvisable for the infantry to engage itself in these twisted valleys without having first dislodged the flanking actions dominating the valleys. Here we would have to cut up the terrain into fragments for small units, up until we reach the big crest at the east of the woods.

This crest is a natural objective beginning with which -- the terrain being uncovered -- we shall have to proceed by combined actions of the whole. The width of the white zone indicates that the debouchment will be difficult. Several solutions may be tried. We may proceed in the order: 3 a, 2 b, 2 a, 3 b, or in the order: 2 a, 2 b, 3 a, 3 b. After that we will approach zone 4, etc....

The bounds to be made will be more or less long depending on the degree to which the terrain is divided into compartments. When there are many compartments, or when the terrain is cut up, it is desirable to decentralize conduct of the combat. Each division, then, is given a direction of attack (See Chapter IV) and, on this direction, marks out, itself, the successive bands of terrain to be captured.

In this method we must not think that we have something that is absolutely new. It comes from the time-honored method of the advance from one defensive point to another defensive point, only it has been enlarged and adapted to the requirements brought about by present day armament.

INFLUENCE OF THE FRONT OF ACTION

We have seen that in terrain permitting the defender to normally employ his means, the attack, on an average, would require three battalions (reinforcements included) supported by eight or nine battalions (7 of which in direct support) of artillery, per 1,100 yards.

Under these conditions a division (with other divisions abreast), supported by two divisional artillerys, can attack on a front of about 2,200 yards. In reality, in the greater number of the attacks of 1918, the fronts assigned to first line divisions varied between 1,980 and 2,750 yards (See Sketches Nos. 18 and 19).

Now, if we may count upon sizeable reinforcements in certain zones of the battlefield, we must, nevertheless, consider the case in which units would be called upon to act with fewer means, or, which amounts to the same thing, upon wider fronts of action.

Experience and the regulations point out that in this case we proceed by partial actions, applying, in each one of them, all the means at our disposal.

How can we determine the zones of each of these attacks?

Three elements are to be considered:

-- the maximum width,

-- the minimum width,

-- its position on the front of battle considered as a whole.

The maximum width of the zone of attack for a given unit-- a division, for example-- depends upon the amount of supporting fires at its disposition, taking into account reductions made possible by the nature of the terrain and the additional aid that can be given by the machine gun companies of the infantry. By combining these various elements we shall usually find, for the organic division having 18 batteries at its disposal and not having to concern itself with counter-battery, a front of attack varying between 1,100 and 2,200 yards.

A corps of 3 Divisions has at its (organic) disposition 66 batteries, which allows it to make an effort on a front of 3,300 to 4,400 yards. With a reinforcement of 30 batteries (for example, 2 regiments, porte', and 1 regiment of heavy artillery (A.L.L.)), it could extend its attack to 4,400 or 5,500 yards.

The minimum width is imposed by the terrain. As we have said above, the attack should include an entire compartment of the terrain.

It may occur that the minimum width allowable for the attack is wider than the maximum width possible. In this case the attack problem cannot be solved by the unit considered; it must be taken over by the next higher echelon, which will concentrate on the selected zone the means of action of the two adjacent units.

The choosing of the zone of attack on the whole of the front will offer no difficulty if, in advance, we have made up what we have called the "plan of conquest of the terrain." It is sufficient to cut out of the first zone to be conquered, a slice proportional to the means at our disposal; and if we have a choice among several slices, we shall take the one which appears easiest to capture and which, at the same time, will enable the attack to make the biggest step in advance.

If instead of an adversary disposed in depth, we have an enemy occupying a line of defensive points separated by intervals, we would proceed in similar fashion, by choosing (as we did in former times) the point that is both the easiest to capture and the most sensitive for the enemy-- that is to say, the point most important for the ulterior development of the combat.

The fact of attacking only one part of the front at a time does not modify the problem given us, which is always that of conquering a depth of terrain sufficient to reach the enemy artillery, say an advance of several thousand yards. But an attack made upon a narrow front cannot attain a great depth. During the war we often said that the "arrow" of an attack was equal to one-half the width of the base of departure.

Without being quite so absolute, we must really recognize that this law is not far removed from the truth. The Regulations for Large Units recognizes it more or less implicitly when it states: "The distance an offensive can go becomes the greater as the front of attack is more extended ---- when the front shortens, the range of the enemy artillery allows the enemy to converge his fires, under the blows of which the attack tapers off and ends by coming to a stop".

We may also note that the development of the protective fires to be placed on the flanks becomes greater and greater and consequently, limits more and more the means of fire that can be used in support of the direct advance.

How are we going to get on?

In attacking only a part of the front, we capture only a part of what would have been the first objective of a normal attack. We must finish the operation by progressively extending the front of the attack up to the complete capture of this first objective.

From this results a new combined action of artillery and infantry.

The artillery which aided in the first attack can participate in the second without quitting its emplacements. It has only to change its trajectories, which can be done in a relatively short time, on conditions that the front be not too extended . (corps or division front).

The same is not true for the infantry. It we want this second attack to get under way without loss of time, this infantry (of the second attack--Tr.) must be on the spot, that is to say, it must have been put in place at the same time as the infantry intended for the first attack.

Thus, the dispositions of a unit making use of successive partial attacks will be very much the same as those of troops attacking on all of the front at once. The difference lies in the cutting up of the successive objectives and in the use of the artillery, which works successively for the benefit of the different attacks.

Let us turn back to Sketch No. 21 and assume that a corps comprising 3 divisions and a total of 100 batteries is to attack, west to east, on the front of 5 miles comprised between Pleine-Selve (inclusive) and Renansart (inclusive). With this proportion of artillery it can make a deep attack on a width of about 4,400 to 5,500 yards. Therefore it can attack on only half of its front at one time. Consequently it will make its effort first against zone 1, then against zone 2. With 40 additional batteries it could extend its attack to Villers-le-Sec.

For this operation it will put its three divisions in line. From the infantry point of view, each of them, from the beginning, will have the density of attack on all its front, since the attack is to be a general attack, with simply a later hour for the movement at the left.

As to the artillery, it is not possible to employ it in entirety for the benefit of the zone of attack. For, on the part of the front which we are not yet attacking, we must leave the artillery necessary to the security of this front-- that is to say, almost the quantity of artillery corresponding to a defensive attitude. It would be very dangerous indeed, if this part of the front should give way while the other advanced. To crystallize ideas by use of figures, we would, therefore, have on our front a "permanent garrison" calculated at the rate of 4 to 6 batteries per 1,000 yards, say 40 to 50 batteries for the whole. The remainder will constitute the mobile mass whose fires we shall be able to displace in passing from the first attack to the second.

The displacement may be accomplished, at the corps echelon, by employing various methods:

-- displacement of the fires of the artillery placed under the direct command of the general commanding the corps artillery;

-- a new distribution of the artillery reinforcements placed at the disposal of the Divisions;

-- obligation imposed on the divisional artilleries adjacent to the zone being attacked.

We will combine these three methods so as to disturb the organization of the command as little as possible in passing from the first attack to the second attack.

The attack, such as we have just defined it, and to which the corps will devote all the means it can use without danger to the rest of the front, will constitute the principal attack of the corps, and the zone chosen will be the zone of "principal effort" of the corps.

But, attacking on a narrow front is not void of disadvantages. While it facilitates concentration of the means of the attacker, it also facilitates concentration of the means of the defender.

Also, it may be necessary to accompany (encadrer) the principal attack by other operations having the object of assuring the safety of its flanks. In terrain that is quite open (little cover), we usually can trace the objectives of the attack so as to avoid any care on this score. But the same thing does not hold true in terrain which is made up into compartments or covered.

Thus, along with the principal attack, appears the necessity of less important operations.

What shall these operations be?

Will they be simply attacks executed with insufficient means, destined in advance, consequently, to certain check? Conceived in this manner, they would not fail to become objects of insurmountable distrust to the executant. It is an illusion to believe that this executant will not appreciate the disproportion existing between the task assigned him and the means at his disposal; on the contrary, he tends, rather, to exaggerate this disproportion. Of course, he will not refused to make the necessary sacrifices but he will never put his heart into an operation which he considers cannot be accomplished.

These new attacks must therefore be, like the principal attack, attacks whose aims shall be proportional to the means at their disposal.

In the preceding example we have seen that the means were not employed, in entirety, in the principal attack. The divisions not on the front of this attack have at their disposal their infantry and a certain quantity of artillery; consequently we can ask of them an effort, limited in depth or in width. To carry things to a limit, they can, at least, act by their fires, if any movement is impossible.

In the example we have just examined, we may ask:

1st Phase: the left division to commence gaining a footing on the slopes of cote 120, to the southeast of Ribemont.

2d Phase: the right division, to commence its movement to the east of Renansart in liaison with the units to the south, and to act by its fires on the terrain to the east of the Surfontaine-- Renansart crest.

In a terrain having more compartments, such, for example, as the zone in Sketch No 8, the troops not included in the zone of principal effort would be given directions of attack, along which they would have to advance in a manner similar to that which we shall point out later in the problem of engagement.

The use of these troops outside the zone of principal effort plays a very important role in the preparation and development of a maneuver. We shall try to bring out this role in Part Three, as far as is allowed by the aim and development of this course.

INFLUENCE OF FORTIFICATION

When the attack occurs after a quite long period of stabilization, we find ourselves opposed by a fortified front.

The attack of a fortified front presents all the difficulties of an ordinary attack, plus a few others: artificial obstacles, shell-proof shelters, better organization of liaisons, etc. . .

On account of its importance, this problem will be made a separate study in Chapter IX.

INFLUENCE OF THE STRENGTH OF THE ENEMY

The methods brought out in the above apply in the case of an attack against a strong enemy. In the following chapters we shall study the modifications to be made when we find ourselves opposed by a weak enemy.

III. ORGANIZATION OF THE BATTLEFIELD

(See Practical notes on staff work)

IV. PLAN OF ATTACK OF A POSITION OF RESISTANCE.

THE DIVISION

We shall now attempt to apply the preceding given quantities in the elaboration of a plan of attack, following always the general scheme laid down for the study of the decision.

As in the defensive, we are here concerned with only a first rough draft.

STUDY OF THE SITUATION

The principal questions we have to ask ourselves are:

1st -- The mission.

What is the front of attack?

What depth must we attain?

Is there a direction, or a zone of principal effort imposed on us?

2d -- The means of action.

Do they allow us to attack along all the front or do they oblige us to proceed by partial offensive actions?

3d -- The enemy.

Are we certain that we are in front of a principal position of resistance?

Do we know the emplacements of the enemy infantry?

Do we know the emplacements of the enemy batteries?

4th -- The terrain over which we must attack.

What is its general appearance? Very free of cover, with many, or few, compartments, etc.

Following the general direction of attack, which are the parts seen from the terrestrial observation posts?

What importance have the various inclosures?

Make up the plan of conquest of the terrain for an attack advancing simultaneously on all the front, and, if it be necessary, cut the successive objectives into slices of a width corresponding to the possible front of attack of the unit.

THE COMBINED DECISION.

In the Division, the idea of maneuver generally reduces to the fixing of the effectives to be put in line and the choosing of a zone of principal effort.

1st - Effectives to be put into action. The question comes up only for the infantry.

The first line will be calculated at the rate of 1 battalion per 550 to 660 yards of front.

To determine the effectives to be put into second line, mentally move each first line battalion in its zone of action and examine into the difficulties it will meet with from the point of view of:

-- the fire it will meet;

-- the obstacles which may hinder its advance;

-- the islands of resistance it may meet.

From consideration of these difficulties we may deduce the number of battalions to be put into second line and the moment at which they may have to go into action.

Fix, in accordance with this, the effectives of the fighting line and its immediate reinforcements.

2d -- Zone of principal effort

If our means of action do not allow us to advance everywhere at once, go back to the plan of conquest of the terrain, and decide upon the zone in which to make the principal effort.

3d -- Centralization of the action.

In an attack on a principal position of resistance-- unless we are in cut-up terrain-- the action is centralized by the Division commander, in the sense that he retains direct command of his artillery and that the quantity of artillery put in support of the various infantry units, varies from one act to the next.

In cut-up terrain, on the contrary, the attack of the Division may be split up into several juxtaposed attacks , each one supported by a special lot of artillery.

The influence of the Division commander is, in this case, exercised through the directions of attack given to each of the mixed elements he has constituted.

4th -- Successive objectives.

The successive objectives are marked out dependent on several considerations:

(a) They must be separated from each other by terrain that is sufficiently homogeneous to avoid any risk that the movement be held up at an important point of the front, which would cause dangerous gaps in continuity of action of the line.

(b) The plan of artillery fire should not have to be changed to any great extent during the march from one objective to another.

(c) Each objective is chosen so as to give as far as possible:

A good line of departure for the following objective;

A good line of resistance in case of an enemy offensive return.

These two requirements often contradict each other. We shall choose the solution that appears most in accord with the later development of the advance.

DISTRIBUTION OF MISSIONS AND MEANS

1st -- Zones of action.

We believe it advisable to recommend that no zones of action be marked out until after having fixed upon the successive objectives; proceeding otherwise would result in a mere diagrammatic solution.

The limits of the zones of action of the regiments of infantry in line are assigned by the Division commander or by the Commander of the divisional infantry.

The rule of giving units in line a front of action which is the narrower in proportion as the effort they have to make is more prolonged, applies especially to units higher than the Division. In the Division, and when it is a case of having to attack a position of resistance, the front of combat is lined with infantry in practically a uniform manner; we arrange the zones of action in taking into consideration the number of units of the 1st and 2d line that are to move in a given sector.

2d -- Plan of the artillery fires.

There are as many plans of artillery fire as there are objectives to take.

Theoretically, the Division commander should indicate the distribution of fires in immediate support of the infantry, direct protection, protection on the flanks. Practically, in this part of the book, it will be sufficient to discuss only the principal points: zones in which the fire should be particularly well reinforced, preliminary destructions, protection of the flanks of the attack, etc.....

3d -- Employment of tanks

Questions relative to the use of tanks are discussed in the infantry course. Here, let us state it will generally be appropriate to use the tanks in the zone in which the principal effort is being made; but this is a rule that is subject to exceptions.

4th-- Mutual support of adjacent infantry regiments.

In the Division, this question may be left to the Commander of the fighting line (the Commander of the divisional infantry).

5th -- Role of reserve units.

In such an attack the reserves are small. We may anticipate their employment in the case of:

-- premature attrition on some point of the front. In this case, the reserves may replace the 2d line troops that have been absorbed;

-- offensive reaction by the enemy. If this occurs, the reserves may have to occupy, for the time being, defensive positions in rear of the attack troops.

These two missions are reconcilable.

V. - PLAN OF ATTACK OF A POSITION OF RESISTANCE

THE CORPS

EXAMINATION OF THE SITUATION

It is made as in the case of the divisions; the only difference is that the plan of conquest of the terrain can be made more freely.

THE COMBINED DECISION

1st -- Centralization of command.

When we speak of the centralization of command, we do not mean that the Corps Commander has to inject himself into the interior affairs of the Divisions. It is simply a question of deciding whether the Divisions shall act without regulating their actions on one another or whether their actions shall be closely intertwined.

In the attack on a position of resistance, the second solution generally forces itself on the Corps echelon, except in the case of terrain that has many compartments. For the time being, we shall assume that it is the solution adopted.

2d -- Combinations of directions

The combination of directions that we can make in this sort of an attack are generally indicated by the lines marking out the successive objectives of the attack.

3d-- Effectives to put into action.

The attack of an enemy position of resistance demands the greatest effort the Corps can make during an operation against an enemy on the defensive. Consequently it is advisable to hold divisions in reserve if we can properly fill out the front of attack in infantry and artillery.

If the corps is to attack all along its front, it is not advisable to give front line divisions a front greater than 3,300 yards and it is even better, whenever we can, to not go beyond 2,200 to 2,760 yards.

Examination of the terrain may furnish us a different idea concerning the width, when the terrain itself is cut into natural sectors for attack. But in this case, even when the front is not greater than 6,600 yards, it will often be advisable to put 3 divisions in line; the command will be better exercised.

4th -- Choice of a zone of principal effort.

This method forces itself on us every time that the means in line do not permit us to support the attack all along the front at the same time.

The plan of attack will determine the initial, and ultimate, zones of principal effort, as well as the amount of artillery to be put into action in the different periods of the maneuver.

5th-- Marking out of the successive objectives.

The marking out of the successive objectives at the corps echelon is naturally made more freely than at the Division echelon.

We should be able to attain the first objective without having to displace the artillery. From which, the maximum limit will generally be in the neighborhood of 3,300 to 4,400 yards.

If the terrain is so homogeneous that there is no danger of the forward movements being stopped on part of the front, it will not be necessary to announce intermediate objectives. If it is not, we may be obliged to fix two, or several, objectives before we make a displacement of the artillery.

When the front must be captured by several successive partial actions separated by large displacements of artillery, the objective of each of these attacks is a corps objective.

The length of the pauses on these objectives is a function of the causes which have led us to prescribe these pauses. If the pause is for the purpose of bringing up the artillery, we must closely study the question. When we have to constitute large groupings of artillery, we shall often have to make pauses of 3 or 4 hours duration.

If the pause is simply for the purpose of allowing two divisions to connect up, it may be much shorter.

DISTRIBUTION OF MISSIONS AND MEANS

1st -- Zones of action

After we have made the plan of conquest of the terrain and determined the successive objectives, the limits of the zones of action of the Divisions can be chosen without difficulty. We will naturally take into consideration the rule that consists in giving divisions fronts which are the more narrow as the effort demanded of them is more powerful or longer.

In this way we roughly determine the zones of action. The exact trace of their limits is made by giving consideration to the mutual aid which must be given by adjacent divisions.

2d-- Additional means to be placed at the disposal of the divisions.

These consist of artillery and tanks.

When the zones of actions of the divisions have been blocked out we can calculate the additional means necessary for the divisions.

Naturally, these means will vary during the course of an operation; they will rise to a maximum, and drop to a minimum. We must give each division at least the minimum. For the additional aid, we may recall to mind that there are three methods to be combined in so far as concerns the artillery: support of the corps artillery, distribution of additional means, support of the artillery of the adjacent divisions. The plan of this coordination of artillery effort is made by the commander of the corps artillery.

3d. -- Mutual aid of adjacent divisions.

The first method presenting itself to our minds is that of prescribing combined actions. This method is not to be rejected, but, as it presents certain difficulties in application, we cannot, for the moment, consider it.

Other methods may be employed:

First, the supporting actions of artillery that have just been mentioned;

Next, the lines of the successive objectives, which will be changed, if necessary, so as to allow the divisions to mutually cover, flank and support one another.

Finally, the definite marking of the limits of the zones of action, which must be done so as to avoid leaving strong points astraddle the limit of action of two divisions.

APPLICATIONS

For applications of the above, we refer the reader to Sketches Nos 43 and 44 on which have been placed, for a corps of 3 divisions (total of 84 batteries), attacking in a zone of action of about 8,800 yards:

-- the successive corps objectives;

-- the dispositions of all the infantry (by battalion) and all the artillery (by battalion)

-- the plan of artillery fires, shown by battalion, at the moment of the start of the attack in the 1st (Sketch No. 43) and 2d (Sketch No 44) phases.

CHAPTER IV

PRELIMINARIES OF DEFENSIVE COMBAT

NECESSITY OF A COVERING FORCE FOR THE POSITION OF RESISTANCE

The position of resistance, such as we have described in Chapter II should not be completely occupied all the time, particularly when the enemy is not ready to attack.

Moreover, its organization requires the execution of many works, which obliges us to employ the troops away from their normal combat emplacements.

Therefore it is necessary to arrange special dispositions to cover the principal positions. This is the role of the outposts.

ROLES OF THE COVERING FORCE

The demands we make on the covering force are quite variable and depend on the situation and needs of the moment.

So, the troops charged with this role may be given all or a part of the following missions:

1st -- Give warning of the approach of the enemy, if he is still distant when we decide to take up the defensive.

2d -- Cover the position of resistance, that is to say, give the main body the time necessary to make its dispositions for combat -- a time which, naturally, varies greatly according to whether or not the means are at our disposition --, and enable us to execute the works under proper conditions of security;

3d -- Stop weak attacks of the enemy;

4th -- In case of a strong attack of the enemy, the mission given will be, sometimes, to withdraw after a combat of more or less duration, and sometimes, on the contrary, to fight on the spot, in liaison with the principal position.

The first two missions are at all times, the duty of the outposts; the last two should be made the subject of precise orders of the command.

First, we shall examine the main outlines of a theoretical covering disposition; we shall then study its adaptation and its functioning.

THE OUTPOST POSITION

The solution most generally adopted for covering the principal position, consists of creating an advanced position called the outpost position.

The infantry of this position must be susceptible of being effectively supported by at least a part of the artillery intended for the defense of the principal position.

From this it results that the outpost position should not be more than 3,300 or 4,400 yards in front of the position of resistance (Do not confuse effective range and maximum range).

On the other hand, in order to play its covering role, it should protect the principal position from the fire of enemy infantry and trench artillery, which, on average terrain, fixes its minimum distance at 1,650 or 2,200 yards.

The effectives, naturally, are very much smaller than those of the principal positions; they are limited by the amount we have at our disposition and cannot, except in unusual cases, exceed two or three battalions per Division. In reality, we cannot count on the units of the outposts coming to cooperate in the defense of the principal position. The garrisons of these two positions must be distinct. We can, at the most, call upon the outpost troops that have fallen back to add themselves to the strength of the partial reserves of the Division.

If the outposts are to resist, we may assume that one battalion on favorable terrain can resist for a certain length of time on a front of 2,750 yards.

We can, of course, go below this figure if the outposts have only a mission of surveillance.

How shall the outpost position be occupied?

In order to play its rôle of a stopping position, it, like the principal position, must offer a barrier of continuous fires, and, if possible, mixed -- that is to say, combined infantry and artillery fires. Continuity of the infantry barrage is necessary if we wish to prevent infiltration of the enemy into the position.

In favorable terrain, it will be desirable to have the outpost infantry itself distributed in depth. But, on account of its small number of effectives, it vulnerability is low, and echeloning is less necessary than on the principal position. The establishing of a barrage of continuous fires should come before any other consideration.

The partial reserves will generally be weak when the resistance of the outpost will depend principally on its fire. They will chiefly act as echelons and will be placed at points favorable to facilitating the eventual falling back of the outposts.

COVERING OF THE OUTPOST POSITION (Sketch No.23)

When the distance of the enemy allows it, the outpost position itself has a special covering force. This covering force duty is performed by the cavalry and some few elements of infantry.

The infantry elements in front of the outpost position will be too small to form a continuous front. They may, in uncovered ground, be pushed forward to a distance of

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12-3-24

2,200 or 3,300 yards. Their mission will be to watch the avenues of approach to the battlefield for the outpost position. They may also serve as support points for the cavalry in case the latter should be pushed too hard by the enemy cavalry.

The infantry dispositions are extended forward by the divisional or corps cavalry, which may, for example, have:

-- patrols or scouts 3,300 or 4,400 yards in front of the first elements of the infantry covering force;

-- stronger elements, or the main body, abreast of these first elements.

The cavalry, naturally, will push forward reconnaissances to a greater distance; but these reconnaissances cannot be considered as forming a part of the outpost proper.

OUTPOST DISPOSITIONS AS A WHOLE (Sketch No.23)

To sum up, as long as the enemy is distant, the outpost disposition, working forward from the barrier of combined fires of the principal position, will comprise:

1st -- An unoccupied zone, 1,100 to 3,300 yards deep, subjected simply to the artillery fires of the defense;

2d -- The outpost position, sometimes linear, sometimes more or less deep;

3d -- 2,200 to 3,300 yards in front, isolated detachments of infantry and small cavalry units;

4th -- Lastly, farther to the front, cavalry scouts.

These various elements may, in case of necessity, be supported by the fires of the long and middle range artillery, as shown by the fires marked on Sketch No.31, and which correspond to the maximum range of the artillery installed behind the position of resistance. However, we must use these fires very prudently in order not to prematurely give away the battery emplacements.

Such, in its main lines, is the ensemble of the dispositions. We must now examine into the modifications of these general given quantities under the influence of the principle variables of the situation.

INFLUENCE OF THE MISSION

Unlike the principal position, the outpost has no possibility of indefinite resistance, hence the mission should fix the duration of resistance by the outpost in case of attack by the enemy. Farther on, we shall see upon what we can base ourselves in fixing this duration. For the moment, it is sufficient for us to note that it will generally be limited.

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12-3-24

From this, it results that we must arrange for the outposts:

-- a plan of defense;
-- a plan of withdrawal.

For the plan of defense, relatively speaking, the methods to be applied are those pointed out in Chapter II.

The plan of withdrawal may include movements within view of the enemy. Now a movement under these conditions is possible only if we have gained superiority of fire over the enemy. Consequently, for the withdrawal of the outposts, we must make up a plan of fires arranged to blind the enemy infantry elements which might have under its observation the uncovered zones which our withdrawing troops will be obliged to cross.

It may happen that the dispositions to be made when we intend to resist are very different from those to be made when we intend to withdraw. In this case, the command must make up its mind and choose between the two missions.

INFLUENCE OF THE TERRAIN

The nature of the terrain has an influence on the choice and the depth of the outpost position as well as on its occupation and the manner of withdrawal of the troops.

1st -- Choice of the position.

We have said that the terrain could be marked out in successive lines of observation posts, each line corresponding to a given position. When these lines of observation posts are suitably spaced (3,300 to 4,400 yards) we will, naturally, be induced to hang on them the principal elements of the covering dispositions.

Thus, the outpost position will be placed on the first line of observation posts in front of the principal position and the line of surveillance of the cavalry on the second one.

2d -- Depth of the outpost position.

When the outpost position is hooked on to a line of observation posts, the infantry -- in order to secure distant observation -- is often obliged to place itself in front of that line, and its position determines the position of the stopping fires of the artillery.

But when the infantry will have to execute its movement in withdrawal, the artillery cannot use observed fire in front of the crest of the observation posts; it is to this crest itself that it must bring back its stopping fires in order to protect the withdrawal of the infantry; and this will be possible only when the infantry shall have arrived at a certain distance this side of the crest. This time, it is up to the infantry to regulate itself upon the possibilities of the artillery.

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12-3-24

Thus, for the outpost position, we will have:

-- a forward limit, corresponding to the line most favorable for the development of infantry fire;

-- a rear limit, corresponding to the line beginning with which the movement in withdrawal can be protected by the artillery.

Between these two limits, the infantry, for the greater part of the time, must depend on itself, and move itself from the forward limit to the rear limit by utilizing the existing cover and the natural channels of movement.

3d -- Occupation of the outpost position.

In terrain that is covered or that has many compartments (similar, for example, to that shown in Sketch No.8) ease of withdrawal is facilitated, but at the same time, the depth and width of the fields of fire are diminished. On one hand, the infantry is obliged to take up dispositions of a more linear nature, on the other hand it is obliged to accept gaps in its barrier of fires. In this case, it is advisable to go back to the system of non-continuous outposts which was used to a great extent before the war. It had defensive points, more or less isolated, occupied by special garrisons -- the supports. The line of supports formed the line of resistance of the outposts and, as these defensive points were liable to be surrounded in case of attack, an "outpost reserve" was constituted with a view to aiding them or picking up what was left of them.

4th -- Withdrawal of the outposts.

We have said that a plan of artillery fires for support of the withdrawal of the outposts should be made up.

In the withdrawal we may expect that many difficulties in liaison will occur. It will be desirable, every time that it is possible, to canalize the movement of withdrawing units into existing avenues so as to diminish the amount and the extent of the protection fires to be demanded of the artillery, at the same time opening up, as soon as possible, the fires of the principal position.

Moreover, as long as the assailant has not passed the line of the observation posts (of the outpost -- Tr.), it is useless to give great depth to the fire -- a linear barrage is sufficient.

INFLUENCE OF THE FRONT OF ACTION.

In general, when the front of action of a battalion is not greater than 2,200 to 2,750 yards, it is generally possible, for it to constitute a barrier of continuous fires and at the same time preserve a certain amount of depth in its dispositions.

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12-3-24

But, should the front extend, the barrier of fires would become too thin and fragile to enable us to trust in it.

In this case we must resign ourselves to a system of discontinuous fires.

It would, however, be dangerous to spread out the battalions too far; because the battalion is the combat unit and it must be possible to exercise command of it. It appears preferable to accept the existence of gaps between battalions.

In this case, the rôle of the higher command is to fix, as we have seen above, the zones to which it attaches the most importance. Resistance will be organized in these zones only -- the others will be simply observed.

Extension of the front has further influence on the centralization of command in the outpost. When the front is greatly extended it becomes necessary to divide it into sectors, each having a special commander.

INFLUENCE OF THE SITUATION OF THE ENEMY.

When the enemy appears, he pushes in, progressively, the advanced cavalry and infantry elements, then he comes into contact with the outpost position proper.

As soon as one line is approached by the enemy the next line is alerted and holds itself in readiness to fight.

The problem becomes difficult only when the enemy arrives in front of the outpost position itself.

We cannot, as a matter of fact, foresee what the first attack of the enemy will be. Two hypotheses are possible. The enemy will attack with either weak means or powerful means.

Now it is not advantageous to evacuate the outpost position on a weak attack, because we would thus uncover at least a part of the principal position and as a result, all movement and consequently all work in this part would become impossible.

Therefore it is reasonable for us to demand of the outposts that they resist an attack by the enemy. But in what form shall we demand it?

To distinguish between a weak attack and a powerful attack is very difficult for troops that are taken under fire by the assailant. Very often we can tell only after the event, after we have seen the result obtained. The most important perceptible indication is the width of the front that is attacked. But the troops included in the attack cannot determine this width themselves. The command only, in rear, is able to inform itself on and, consequently, estimate the value of, the attack.

/lkb
12-3-24

Consequently, it is generally fallacious to give outposts the order to hold against a weak attack and to withdraw before a strong attack. In case of attack -- be it weak or powerful -- all that the outposts can do is:

-- either to hold;
-- or to withdraw;
-- or, if absolutely necessary, to hold for a predetermined length of time and then attempt to withdraw.

In the first case, every effort is brought to bear upon the forward limit of the outpost position.

In the second case, every effort is brought to bear upon the rear limit of the outpost position.

In the third case, the effort is spread out between the two positions.

The first two solutions can be used. The third has all the risks of a complicated and nearly unmanageable operation.

In other words, the estimating of the force of the attack cannot be delegated to the outposts -- it is the duty of the command to judge, in advance, whether it risks more in ordering the outposts to hold or to withdraw.

The formula which consists of giving the outposts the order to hold as long as they can, and then withdraw, is not any better. For the obligation of holding as long as possible brings in the military honor of the executants. Now, we know to a certainty that we have done all that is possible only when it is too late to get away. Practically speaking, we have simply the choice of leaving too soon or leaving too late. The command has no right to subject its subordinates to such a conflict of duties. The outposts must "receive a simple and precise mission in case of attack: withdraw, or defend in place" (Instructions for the Employment of Large Units, No.160).

Does this mean that the situation of the enemy is without influence on the conduct of the outposts? No, but it acts only indirectly. The variations in the situation of the enemy influence, first, the mission to be given to the outposts and afterward only, in an indirect way, the conduct of the advance posts themselves.

The principal element in the decision of the command, as concerns the enemy, will be the importance of the preparations for attack and, lacking precise indications, the time which the enemy has had in which to make dispositions of his means.

In this way, the mission of the outposts may very in the course of the same operation. It may be resolutely defensive when the enemy, coming into contact, has as yet only feeble means at his disposition. Then, after a certain period of time has gone by, and the assailant has been able to bring up greater means, the withdrawing mission may be substituted for the resisting mission.

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12-3-24

OUTPOSTS DURING THE WAR OF 1914-1918

During the first years of the late war, the outposts had nearly disappeared. As a matter of fact, we wished to, at any cost, maintain the integrity of our first line. The position of resistance was in immediate contact with the enemy and there was not room in front of it for an outpost position.

But in 1918, the High Command made the decision (in case of serious attack by the enemy) to accept battle on a position of resistance farther in rear, and we again saw reappear the ideas of a covering force and outposts.

Although the solutions adopted still preserve some trace of previous dispositions and, in addition, bear, more or less, the marks of the preoccupations of the moment, we may say that toward the middle of 1918, the evolution is finished and that the measures taken are sensibly those advocated by our present regulations. As an example, we give here an extract of the plan of defense of the First Army at the date of July 20, 1918.

EXTRACT OF THE PLAN OF DEFENSE OF THE FIRST ARMY IN JULY 1918 (SKETCH No. 20).

GENERAL MISSION OF THE ARMY AND DEFINITION OF THE POSITION OF RESISTANCE.

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The First Army has a defensive mission.

In execution of the orders of the General commanding the Group of Reserve Armies, the First Army must, at all costs, stop the enemy on a position, called position of resistance, chosen so as to, in great part, escape from the fire of the enemy preparation. The troops are echeloned in depth in each sector, but the fight must be made on the position of resistance with all the forces.

The position of resistance of the First Army is defined by the line: Cachy--Gentelles--Thezy-Glimont--Hailles--Bois 105--Rouvrel--Merville--Louvrechy--Sourdon--Esclainvillers--Coullemelle--Villers-Tournelle--Broyes--Welles-Perennes--Ferrieres (liaison with the Third Army).

The position of resistance, distant from the front in the southern part, is nearer to the front on the Rouvrel plateau and in the region of Villers-Bretonneux, where it is particularly important to stop any enemy advance.

As a matter of fact, even a slight German advance on the Villers-Bretonneux plateau would place Amiens under direct observation of the enemy field artillery; likewise, if the enemy succeeded in advancing its lines upon the Rouvrel plateau, it would interrupt communications to the south of Amiens and take the defenses of Villers-Bretonneux in reverse.

/lkb
12-3-24

Finally, this region is the point of contact of the French and British fronts; consequently, any backward movement of the left flank of the First Army would risk a withdrawal of the British right.

The plateaus of Rouvrel and Villers-Bretonneux, therefore, are the most sensitive parts of the front of the Army. In addition, they have a reciprocal action, one upon the other, on account of the square formation of the front; the Rouvrel plateau enables use of enfilade fires in the valley of the Luce and flanking all the southern part of the Villers-Bretonneux plateau. The possession of this latter allows our batteries to enfilade the valley of the Avre and to flank the front to the south of Hailles. Finally, we can bring about a powerful concentration of fires on the German observation posts and batteries of Knob 110 (north of Moreuil).

Conversely, the denuded region to the north of the Luce is exposed to the fires of the German batteries established in a half-circle on the front: Moreuil--Demuin--Marcelcave.

To the south of the Bois de l'Arrière-Cour, the front moves away from the railway line of the Noye, especially at the extreme right, where an enemy attack would not immediately strike a sensitive point.

....

CONDUCT OF COMBAT

...... The troops occupying the first position must consider themselves as outposts, having the mission of insuring the integrity of the front against patrols and raids, and obliging the enemy to put on a regular attack if he wishes to cross the outposts.

The position of resistance must be held at any cost. Any position lost must be retaken ....

Security garrisons are designated to at all times occupy the intermediate and the 2d position.

INSTRUCTIONS RELATIVE TO THE OUTPOSTS

1. -- The outposts occupy the first position at all times, with the mission of maintaining contact with the enemy and holding this position against raids and unexpected attacks.

Their strength has been fixed by special orders; it varies with conditions and the degree of advancement of the works, of which the Corps Commanders are the judges.

Barrages, concentrations, counteroffensive preparations support the defense of the outposts.

/lkb
12-4-24

2. -- When a general attack is probable, the army (First - Tr.) commander gives the order to put into effect the alert dispositions arranged for the defense.

As concerns the outposts, these dispositions will be as follows:

The outposts, brought up to the effective strength contemplated for each sector, occupy the first position.

The outposts proper (petits postes = outposts proper) are on the surveillance parallel, the combat parallel or the support parallel.

The supports are on a line called "line of resistance of the outposts", which will often be the same as the parallel of "réduits" (parallel in which the final resistance is made -- Tr.)

This line is marked out by ..... (See Sketch).

On this line, the supports must not be spread out, but must be grouped by companies or half-companies so that the troops are well in hand; they should, when it is possible, occupy defensive points organized for prolonged resistance even after being surrounded.

The plan for employment of the artillery contemplates fires to support the defense of the outposts.

STRENGTH OF THE OUTPOSTS

21st Corps	(37th Division	.7 companies
	(42d Division	.5 companies
9th Corps	(66th Division	.6 companies
	(15th Colonial Division.	.8 companies
	(3d Division	.9 companies
10th Corps	(152d Division	.4 companies
	(166th Division	.5 companies
	(60th Division	.6 companies

USE OF THE OUTPOST POSITION TO BREAK UP THE ENEMY ATTACK.

(Sketches Nos. 25 to 30)

The regulations contemplate (Art.129) that we can use the outpost position to break up the attack of the enemy.

Disassociation of the front of attack in the sense of its width will result from the inequalities of resistance encountered by the attack. In order to develop these inequalities it is necessary that the defense itself present a noncontinuous front to the attack. We shall secure this result by maintaining in the outpost position -- after the withdrawal of the troops -- some islands of resistance which will have the mission of accepting combat with no idea of withdrawal, and which must hold to the last extremity. The presence of these islands will create gaps in the front of the attacking force, which will bring about the desired dislocation.

This solution was brilliantly applied by the Fourth French Army on the 15th of July, 1918.

They had been ready to receive the attack for several days. Beginning with the 15th of July, the first line was evacuated every night and the following withdrawal dispositions, arranged for in the plan of defense, were taken up:

In each regimental sub-sector, one and one-half companies, at the maximum, were echeloned in the covering position: 2, 3, or 4 half-sections in the centers of resistance of the 1st line (covering themselves by patrols); one company in a center of resistance in rear.

The role of these elements was as follows:

1st - Inform the command and the artillery of the starting of the enemy attack;

2d - Break up the assault waves of the enemy and canalize their flow.

This infantry maneuver was arranged with a view to keeping the enemy under the fires of artillery during the entire time its attack dispositions would take in passing over the terrain yielded by our covering force and to allow of the readjusting of the artillery fires on the head of this attack, by means of the signals or information transmitted by the successive echelons of our infantry.

The system of artillery fires would include preventive fires (counterpreparation, interdiction, etc.....) and stopping fires. These latter were themselves divided into five sets.

The first two were to be put down before the attack. They followed each other automatically and constituted a sort of warning for the outposts.

The last three were to be put down upon call, successively: of the redoubts of the first line (outposts proper); the centers of resistance (supports); and the principal line.

A very thorough system of ground observation (1) and communications had been organized.

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(1) One of the factors of success was an excellent organization of ground observation, prepared throughout the entire depth of the defense ..... All of the ground observers of artillery were paid for their trouble the 15th of July by the numerous objectives they had the opportunity of attacking and destroying by fires which were the more effective because they were put down and controlled by ground observation. (Commandant Verguin).

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12-4-24

As regards the nature of the fires:

For the field artillery, each stopping fire was arranged, not as a barrage, but as a fire whose depth was equal to the supposed depth of the enemy attack dispositions.

For the heavy artillery, the fires were concentrations directed on the parts of the terrain invisible to ground observation which were susceptible of use by the enemy as avenues of approach for the attack.

The fires were not to be put down on the centers of resistance in front of the principal line as long as it was not certain that the enemy had taken them.

During the entire period of waiting for the attack, efforts were made to secure information by means of frequent raids and one of these raids gave us information of when the German preparation would start and how long it would last.

The German preparation was put down at ten minutes past midnight, 14/15 July. It was preceded ten minutes by our own counterpreparation, which started at midnight.

The attack commenced at about 4:00 AM. The arranged fires functioned as had been contemplated and with such effectiveness that the enemy had to abandon the open ground and get down into the communication trenches in order to advance.

At about 6:00 AM, set No 4 was put down in front of the centers of resistance and at about 6:30 AM set No.5 was put down in front of the principal position.

At noon, the attack was broken all along the line.

In order to apply such a maneuver with good chances for success, we must make extremely careful preparation. In addition, it is necessary that the islands of resistance really hold during the attack, which requires:

1st - that their defenders have shell-proof shelters in them;

2d - that these islands be able to resist when surrounded, that is to say, that they have sufficient accessory defenses on all sides;

3d - that they may be supported by observed fire of the artillery of the principal position, for, if they were captured without our knowing it, the terrain on which they stand (not being beaten by our artillery) would constitute a favorable avenue of approach for the assailant;

4th - Finally, in the future, we must be ready to fight against tanks.

/lkb
12-4-24

All of which means that the operation cannot be improvised. It was easy on the old positions where we had the possibility and the time for preparing everything very carefully; on new positions, naturally, it will be more difficult.

In any event, the islands of resistance should not be too numerous; if they are too numerous they will, in a way, reconstitute a sort of continuous front, and if the enemy attack is stopped all along the line at once, the breaking up effect will not be produced.

OTHER COVERING FORCE DISPOSITIONS--THE ELASTIC DEFENSE.

The outpost disposition we have just described is not the only one possible.

During the latter part of the war, the Germans frequently used a method called the "elastic defense", which is, in a way, a maneuver in retreat, executed with very weak and very mobile means.

It consists of echeloning, in the zone the assailant must cross, either simply successive curtains, or even isolated machine guns placed at points favorable for executing long distance fire. Their usual mission is to defend themselves a certain length of time and then fall back.

Cavalry and cyclists are particularly adapted to this role. Infantry may also be used, keeping automobiles or a truck close to each group so that they may make their get-away quickly. This method has also been much used by auto-machine guns (machine guns mounted on automobiles -- Tr.) and, in the future, it may be one of the uses of light and rapid tanks.

This system, like the maneuver in retreat from which it is derived, (1) has as chief object causing the enemy to lose time by obliging him, at each pause, to bring up the means necessary for attack. In this way, it may be used entirely, or partly, in the covering of a position of resistance.

In reality, it is advantageous not to tie ourselves down absolutely to one disposition -- whatever its intrinsic value may be -- for, if we always acted in the same manner we would make it too easy for the enemy.

ROLES OF THE CORPS AND OF THE DIVISION.

The conduct of combat in the outposts being essentially an infantry affair, it remains for us to see what the roles of the Division and Corps echelons are in selecting the position of the outposts and the missions to be given them.

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(1) See Chapter VI, following.

/lkb
12-4-24

The outpost position is often fixed by the Army Commander. In this case the Corps Commander receives from the Army Commander information on:

- the general trace of the outpost position;

- the role which it is to play in the ensemble of the battle.

The emplacements, the effectives and the mission of the outposts remain to be determined.

The detailed emplacements can be fixed only by that echelon of command that assures the combination of arms, i.e., the Division Commander. Particularly is it his function to specify the forward line of resistance and the rear line of resistance of the outpost position. The Corps Commander will limit himself to indicating the line of terrain on which he wants the eventual position of resistance hung -- in case this has not been specified by the Army.

According to Instructions for the Employment of Large Units (Art. 160), it is the Corps Commander's duty to fix the mission of the outposts. The Division Commander will only adjust the dispositions to the decision that has been made.

In order to determine this mission, the Corps Commander must consider:

- the mission received from the Army, fixing the general role of the outposts;

- the period of time of which he has need to put in place the troops that are to occupy the position of resistance -- a period of time that he should have had calculated by his staff for the principal possible situations which might affect his troops, and which must include the time necessary for the transmission and execution of the alerting order;

- and finally, the situation of the enemy, as we have shown above.

The effectives of the outposts will also be fixed by the Corps Commander. As a matter of fact, they depend not only on the availabilities of the combat line, but also, and chiefly, on the mission given. It is evident, of course, that if the outposts are to withdraw in case of attack, they do not need as large effectives as if they were to fight on the spot.

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12-4-24

CHAPTER V.

THE PRELIMINARIES OF OFFENSIVE COMBAT AGAINST AN ENEMY IN POSITION.

I. GENERAL CONSIDERATIONS.

The preliminaries of offensive combat against an enemy in position are different from those against an enemy in movement.

In order not to be confronted by too many questions at once, we shall, in this chapter of our study, limit ourselves to the following hypotheses:

-- Combat against an enemy in position;

-- Units acting abreast of one another;

-- Positions of resistance of the enemy covered by dispositions analogous to those described in the preceding chapter.

Later, we shall examine into the modifications which should be made in our conclusions, when the given quantities of the problem are differemt, in particular, when we have to do with an enemy in movement.

The strength of the position of resistance and the presence of a covering force, oblige the assailant to perform a certain number of successive operations before passing on to the attack of the principal position.

According to Instructions on the Employment of Large Units, these operations are:

1st - The advance up to the entrance into the zone of long range artillery fire.

2d - Gaining contact.

3d - The engaging and, eventually the pushing back, of the enemy covering force.

4th - The preparations for attack.

MARCHES AT A DISTANCE FROM THE ENEMY.

For the technique of marches at a distance from the enemy, we refer to Practical Notes on Staff work.

One of the principal cares of the command during this period will be to determine the moment at which it should come to an end, i.e., the line beyond which we penetrate into the zone of the long range fire of the enemy artillery, because at that moment new dispositions will be forced on us.

According to what we have seen in studying the defensive, this limit may be found at a distance of 11,000 to 13,200 yards in front of the position of resistance, or at 6,600 to 8,800 yards in front of the outpost position.

Since, by assumption, our enemy is in position, we may, through the aviation or information service, have indications concerning the zone where he is preparing to resist. It is then possible to calculate approximately the line beginning with which the approach march will be forced on us. This first appeoximation will be confirmed -- or furnished, should it so happen -- by the cavalry, which will have pushed forward to the outpost position, or at least, as far as the first elements of enemy infantry.

In order that information secured by the cavalry may arrive in time to be useful, it must be started off quite a long time in advance. The idea would be for the command to know where it stands at the moment at which it orders its last march on the roads.

GAINING CONTACT AND ENGAGING.

The approach march, gaining contact and engaging are closely intertwined operations in the sense that each act must prepare the subsequent act, and is conditioned by the preceding act.

It even often happens, at the higher echelons and particularly at the Corps, that the same decision and the same order arrange the gaining of contact and the contingencies of the engagement. It is chiefly at the Division and the lower echelons that they may constitute clearly separate acts.

All these operations are governed by a single intention: get up to the proximity of the line beginning with which the enemy puts up "serious resistance", and, consequently, attack and push back his covering elements.

In order to clear up this question, we are first going to examine into the ensemble of the problem of attack of a covering disposition. It will then be easy for us to deduce the dispositions to be made for gaining contact and engaging.

II. -THE ATTACK OF A COVERING DISPOSITION.

Two questions are to be considered in the problem of the attack of a covering disposition:

Are we confronted by a covering disposition?

What is the method of operation suitable?

Of these two questions, the command must solve the first before the second; but, in the discussion, it is easier to take them up in inverse order. Therefore we shall commence with the second.

CHARACTER OF THE RESISTANCE PUT UP BY A COVERING DISPOSITION.

In the preceding chapter we have seen that several solutions might be adopted for the covering force, which, consequently, wil present successively or simultaneously:

- isolated points;
- curtains;
- weak resistances echeloned in depth;

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12-5-24

- real barrage positions.

Whatever the system used, the resistances put up will have certain characteristics in common.

The ensemble will echelon itself in quite great depth, which may attain several thousand yards and in which it is impossible, in advance, to locate the details of the enemy's resistances. Here again, as in face of a position of resistance, it is the "terrain" which we must attack.

The system may, all the time, give the impression of a continuous line of infantry fires; but the mixed barrages (infantry and artillery), at any given moment, extend along only small fronts.

The infantry emplacements are chosen, most often, as a function of the special properties of the arm and not with a view to a combination of infantry fires (and artillery fires (?) -- Tr.) We perceive that the infantry occupies positions which are not under observation by the ground observation posts of the defense. In consequence, liaison between the infantry and the artillery is often very bad, and the different successive lines show weak points.

The different elements of an infantry line are more nearly mutually dependent than in a position of resistance. The fall of one point compromises the holding of the adjacent points.

The ensemble of the system on a given line is markedly weaker than in the case of a position of resistance. We should be able to conquer it with less large means.

MEANS TO PUT AT WORK.

In addition, would it be judicious to put into action against a covering disposition as large means as we would against a resistance disposition? Of course not -- such action would be playing the enemy's game.

Whether the enemy has simply the object of causing us to lose time so that he may leisurely prepare his principal resistance -- or whether he has in view causing us to make a premature deployment in a certain direction -- we shall, in either case, (if we let ourselves be "done") be in an unfavorable situation.

To speak only of the first case, it is not advisable to organize our base of attack too far from the principal field of battle. Moreover, since the choice of the zone of principal effort is dependent on the terrain, it is easy to see that each step in advance would oblige us to pronounced changes in the zones of action of the large units engaged.

Therefore it is preferable to proportion the effort to the amount of the enemy resistance and to keep something in hand for use when needed.

The means to be put into action being less large, it results in this: that the zones of action of first line units may be larger than in the attack of a position of resistance. To settle upon a working basis, it would seem that a front of 4,400 to 5,500 yards per division would be quite acceptable.

NATURE OF THE OPERATION.

Though the means put into action along the entire front are less powerful, it does not follow that we can attack uniformly upon all this front.

Even against a weak enemy it is always necessary to gain superiority of fire and make use of organized and well supported attacks.

When we run into a system of continuous fires, we have to break into it by main strength. Now, we know that a Division with its organic means can act effectively on a front of 1,100 to 2,200 yards. The Division, then, makes a breach of this width and, of necessity, it must commence by so doing.

But, this accomplished, the situation is no longer the same as in front of a position of resistance.

For, if against a weak enemy, infantry alone is nearly incapable of effecting rupture, on the contrary it can, by combined actions, rapidly enlarge a breach, either by its own means or with a slight increase in artillery support.

Thus, the attack of a covering position will comprise two sorts of operations:

- Direct actions with the object of penetrating by force into the enemy position, which actions require large means;

- Actions with the object of enlarging the breach that has been made, which actions can be carried out with smaller means than the first.

We shall better grasp the nature of the method in comparing it with the one advocated for the attack of a strong position.

In this latter case, in fact, the enlarging of the front of attack requires new combined efforts of infantry and artillery and the second combined effort of the unit is, so to speak, juxtaposed to the first.

In the attack of a covering position, the combined efforts are superposed in depth, the commander leaving to his infantry the job of exploiting the results of each combined effort.

ARRANGING OF THE COMMAND.

This method of operating does not require centralization of command to the degree we have seen as necessary in the attack of a position of resistance.

To be specific, from the moment that each Division works ahead itself and obtains sufficient results, the intervention of the higher echelon would only slow up matters. Therefore it is natural that the Corps Commander should leave it to the initiative of his first line Division Commanders.

Can decentralization of command go lower than the Division? Theoretically, it is not absolutely impossible. Practically, we are limited by consideration of the means. In reality, advanc-

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12-5-24

ing requires a series of ruptures which can be made only by combined units of infantry and artillery, and decentralization cannot go lower than the smallest unit capable of making, by its own means, a hole in the enemy's dispositions.

CHOICE OF DIRECTIONS OF ATTACK.

Does this decentralization imply abdication of command? Not at all.

If we again compare the two systems of attack, we note that in the attack of an organized position, our efforts are directed toward the capture of linear objectives, whereas in the attack of a covering position, these efforts are oriented upon points echeloned in depth -- in other words, directions of action.

The choice of these directions is not a matter of no consequence, any more than is the choice of the direction in which we shall enlarge the holes.

Depending on whether the directions of action of two adjacent divisions are close together or far apart, depending on their degree of convergence, depending on whether the enlarging of the breaches is made in one direction or another -- the "pockets" made in the enemy's dispositions will join up with one another more or less readily and the collapse of his system will be more or less rapid.

So, the higher command can combine the efforts of two adjacent divisions by suitably choosing and indicating their directions of action -- it being understood that the direction given picks out the succession of objectives toward which the subordinates must orient their principal effort.

This idea of the importance of directions is given in detail in Articles 111 and 152 of "Instructions on the Employment of Large Units". Needless to say, it has a corollary -- the strict obligation of the subordinate echelon to keep its unit headed along the direction indicated (1).

ACTION OF THE HIGHER COMMAND.

We see that by fixing direction of engagement, the command exercises action on the direction of combat. But one objection immediately comes to mind. If we content ourselves with fixing directions, shall we not, at some moment, find ourselves more deeply engaged than we wish to be?

Of course, the depth of a position of resistance is not unlimited. The covering dispositions protect something we shall finally run into and the operation cannot be prolonged indefinitely without danger.

The command has two possible means of again getting its subordinates back in hand: limit the effectives they are allowed to engage, or cut up the operation into successive steps.

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(1) As we see, the idea of direction is the opposite of that of successive objectives, and is not the opposite of the idea of zone of action. It is in no way incompatible with this latter, at least in the large units.

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12-5-24

Limiting the effectives is pointed out in the Regulations for Large Units as a method applicable when the object of the operation is verification of the value of the contact. But we do not believe it desirable to avail ourselves of this method when we wish to push back the enemy's covering dispositions. It is easy, in fact, to see that it is necessary to have a great deal of infantry in line so that the breaches may be rapidly enlarged. On the other hand, action over a considerable depth of ground leads to numerous "messes". The commander who is directing the action must be able to halt a unit that is unable to make further progress and to engage another in a secto that has become more favorable. If we must ask authority of the Corps Commander every time we wish to engage a fresh battalion, the operation will be paralysed. Such a procedure is impracticable. At the beginning of the affair we must give each unit in line fully sufficient means to enable it to carry on to a conclusion.

There remains only the second process: fix successive steps. But isn't this a return to successive linear objectives? No, for in the second system the efforts are mutually dependent along the whole front whereas in the first each unit presses on toward the assigned goal without regulating its movements on those of its neighbors.

The length of these successive bounds is generally indicated by the terrain. The length is also governed by the consideration that the situation must not be able to undergo marked changes in the course of a given bound.

Finally, while the operation is going on the command watche it and if, for example, it perceives that the holding back of one unit threatens to compromise the advance of its neighbors, it can, at this moment, give new missions.

INFLUENCE OF THE TERRAIN.

The terrain influences choice of the successive steps and directions, and zones, of action. The successive steps are marked by the salient lines of the terrain: lines of observation posts or marked depressions. If the terrain is very uniform, or cut up, we may content ourselves with lines which are easy to pick up, such as roads, railways, canals, etc., perpendicular to the direction of attack.

In selecting directions we shall choose series of objectives whose capture does not require means greater than those possessed by the executant; if we do not do this, we must be ready to furnish him additional aid. It sometimes happens that the terrain presents quite large bands in which any sort of partial action is impossible. We solve the difficulty by flexing the directions of action so as to secure an acceptable solution.

Finally, the limits of the zones of action must give first line units complete freedom of maneuver for attack on the successive objectives assigned them. From this we see that the delimitation of the zone of action should be made after the dir ections of action have been decided on, and not before.

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12-5-24

INFLUENCE OF THE WIDTH OF FRONT.

When the front is very wide and, for example, is greater than 5,500 to 6,600 yards per division, it may happen that the pockets scooped out in each sector are too far apart for them to be connected up. We must then close in the directions of action so that the results obtained by two adjacent units may be added together on one part of the front.

Conversely, it would be undesirable to diminish the fronts of action below a certain limit, for the units in line would no longer have the space necessary for maneuvering, and the higher command would have to intervene to arrange the conditions under which they would afford mutual support.

APPLICATION.

Let us assume a Corps coming from the west (Sketch No. 32) and having reached the front: Templeux-la-Fosse--Bois de Buire--Buire-Courcelles--Cartigny. It has two divisions in the first line and is to act on a front of about 8,800 yards.

In front of it is an enemy covering disposition of undeterminate depth, which it proposes to penetrate.

When it is a question of advancing and, consequently, frequently displacing our attack system, it is important -- perhaps more so than in the attack of a principal position of resistance -- to search the terrain for zones from which the artillery may support the infantry by observed fire. Let us mark these zones on our map in the usual way.

The Corps having two divisions in first line, we must now determine the zones most favorable for an advance by main strength on a front of 1,100 to 1,650 yards, the possible front of attack of each of our first line divisions.

Thus, for the north division, we shall find a band marked out by Tincourt--Boucly--Hamelet--south of Roisel--north of Hesbecourt--Ferme de Fervagude--heights of Buisson--Guillaine. Beginning here, support by observed artillery fire becomes impossible along all the front included between Bellicourt and Bellenglise.

As for the south division, it will advance first along the axis: Cartigny--Bernes. At this point the direction of advance runs into a stonewall, so to speak. We shall slip it toward the north as far as croup 104, then it will pass between Jeancourt and Vendelles after which it runs into another stonewall to the south of le Vergnier. This time we must move toward the south and pass between Vadencourt and Maisseny so as to reach the heights south of Bellenglise.

The axes of the bands we have marked out constitute the direction to be given to each division..

The limits of the zones of action must give each division the facilities for maneuver needed by it. For example it may be marked out by: south of Boucly--Hervilly--north of Vergnier --Ascension--la Baraque--to the north of Bellenglise.

As successive Corps objectives we will take lines beyond which or this side of which we may anticipate special difficul-

/imdr
12-5-24

ties for a division, for example:

1. - Beausejour--northwest of Hesbecourt--Hervilly--Bernes, where a pause is useful, the south division having a zone of advance that is much easier than the north division.

2. - Villeret--Vergnier--Bihecourt, because of the difficulties we may anticipate for the debouchment of the south division.

3. - Buisson-Guillaine--Pontru--Monidee, so as to advance the right of the Corps in order to facilitate resumption of the advance by the north division.

In terrain that has many compartments or much cover, the directions of action may be more freely traced. It is sufficient to leave between them sufficient space so that the divisions may support one another without embarassment.

INFLUENCE OF THE VALUE OF THE CONTRACT.

The system which has just been described applies to the case in which the enemy infantry presents lines of continuous fires.

Now it sometimes happens that, on their exterior edge, covering dispositions show up first in the shape of discontinuous elements of fire. In this case, it is, naturally, not necessary to put as powerful means into action, for these isolated resistances may be treated by outflanking. Relatively weak detachments -- advance guards, for example -- are sufficient for this mission.

III. THE APPROACH, GAINING CONTACT AND ENGAGING.

Let us now take the attacking troops at the moment when they arrive at the limit of maximum range of the enemy artillery. They are going to enter the field of battle. They must now advance to the enemy position of resistance.

To do that, they must simultaneously solve:

- a problem of approach;

- a problem of reconnaissance;

- a problem of combat.

THE APPROACH.

In the approach, we must guard against the effect of enemy artillery and infantry fire.

To free ourselves from the effects of infantry fire, we must be master of the visible horizon of the zone in which we find ourselves up to a distance of 2,750 to 3,300 yards.

To free ourselves from the effects of artillery fire, we must conceal ourselves from ground, and, if possible, from aerial observation.

/imdr
12-5-24

The problem of the approach, then, is both a problem of avenues of approach and protection.

The expression "avenues of approach" used here must be taken in a general sense; it applies to all of the portions of the zone in which it is possible to escape enemy ground observation.

Protection requires us to put out detachments of more or less size: advance guards and flank guards.

RECONNAISSANCE, ESTIMATING THE VALUE OF THE CONTACT.

Although the enemy's resistance may increase progressively and although, in certain cases, it may be difficult to determine the value of the contact, yet we may say that, the greater part of the time, this value of contact may be classified as being in one of the following categories:

- resistances or lines of noncontinuous fires of infantry and artillery emanating from advanced posts;

- resistances or lines of continuous fires of infantry and artillery emanating from a covering disposition;

- resistances or lines of continuous fires of infantry and artillery coming from a resistance disposition.

Troops moving to the attack, the greater part of the time, will successively meet these three sorts of resistances.

Now, we already know that to each of them correspond different dispositions and different solutions.

Therefore it is indispensable that the command be informed at the moment when its dispositions are going to pass from one zone into another. Consequently, we must determine successively:

- the forward limit of noncontinuous resistances (apparent contour of the enemy);

- the forward limit of continuous infantry fires (the object of gaining contact);

- the forward limit of continuous infantry and artillery fires (the object of the engagement) (1).

For these purposes we have at our disposal cavalry, advance guards and the first elements of the main body.

The cavalry. We may expect that the cavalry (Divisional Cavalry and Corps Cavalry) will push back the enemy cavalry and give us the apparent contour of his infantry. Will it be possible for it to accomplish more? In certain cases, yes, but it is a question of luck. It can, of course, attack or maneuver around this or that advanced post; but it is too weak to do this all along the front, the more so as it may find itself paralyzed by combined resistances of enemy cavalry and infantry. (Sketch No. 33).

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(1) In reality, and on a front of some extent, things do not, of course, occur in such a simple way. The limits here given are simply reference lines intended to enable us to place, for purposes of comparison, the value of a given contact.

/imdr
12-5-24

The advance guards will easily absorb noncontinuous resistances by outflanking, will clean out the advanced parts of the outpost position and in this way push forward until they find themselves in the presence of a line of continuous infantry fires. From this moment on it will generally be difficult for them to continue to advance: they will have been induced to spread themselves out over a broad front and the enemy very likely will have gained superiority of fire over them. Their role, in so far as advance guard work is concerned, will be finished (Sketch No. 34).

Arrived at this point, we still will not have come to a conclusion as to the value of the contact. We shall have the minimum limit of this value, but it will not always be possible to say whether we are confronted by a covering position or a principal position. Now, as the dispositions to be made are not the same in the two cases, a certain exactness of knowledge is indispensable.

The commander has several means for securing this exact knowledge.

First, he must make use of all information that he has been given by the air service, prisoners, observation of the first fires of the enemy artillery, etc......

He should also carefully examine the apparent characteristics of the enemy dispositions, which, as we have seen above, are not the same in a resistance disposition as they are in a covering disposition.

If all this is not sufficient, we will be forced to have recourse to combat and determination of the value of contact will be one of the objects sought in the first engagements. (See Nos. 152 and 175 of Instructions on the Leading of Large Units). (Sketch No.35).

The procedure is to attack as if we were confronted by a covering disposition. We observe the reactions of the enemy and in particular, the greater or lesser difficulties has in enlarging by its own means, the breaches made by the main strength attacks. As soon as enlargements can no longer be made, the chances are that we have found the position of resistance we have been looking for.

COMBAT.

The object of combat is to push back the covering disposition of the enemy.

We have previously studied how it is accomplished; we shall not go back to it. Let us remember only that the dispositions to be adopted do not include putting into action all the troops and that the command must hold out part of what he has for the attack on the principal position.

The preliminaries of combat come to an end when we are in contact with that position.

/imdr
12-5-24

THE DISPOSITIONS.

In consequence of the necessities that have just been pointed out, the dispositions will comprise:

- a first echelon of forces: cavalry and advance guards, intended to assure the security of the main body and to gain contact with the enemy;

- a second echelon, intended to furnish the means to be put at work in pushing back the enemy covering dispositions;

- a third echelon, comprising the reserves which will be engaged only in front of the principal position.

THE ADVANCE GUARDS.

They have as mission: protecting the march of the main body, pushing back the first enemy elements and determining the first line of continuous fires installed by the enemy.

They are habitually constitudedby Division.

They must be strong enough to sweep the entire front of the division and to crush the isolated resistances which the enemy may set up. On an average front this will usually require all the divisional cavalry, at least, two to three battalions of infantry and two to three batteries.

The distance at which they operate must be great enough to insure protection of the main body from observation by ground observation posts of the enemy. The distance, consequently, may vary according to the terrain but will rarely be less than 3,300 to 4,400 yards.

As, due to the necessities of maneuver, the advance guards will march more slowly than the main bodies, this distance may be greater at the start if we are certain that we are dealing with an enemy in position.

It is desirable that the advance guard of the division be under a single command, but, here again, it is necessary that the command be able to function -- which sometimes renders this rule inapplicable on certain terrains, or where the front extends.

THE MAIN BODIES.

The dispositions of the main bodies must satisfy two conditions:

- move under cover from observation;

- be ready for engaging immediately, either to support the advance guards, or, eventually, to pick them up, (i.e., again give them a place in the Division proper as they are passed by the attacking troops of the main body.--Tr.).

These two necessities often being contradictory, we generally proceed by successive steps. The main bodies move from combat position to combat position, arranging their movement between positions as well as possible.

/imdr
12-5-24

The movements of the artillery and the infantry are habitually alternated, one remaining in place while the other moves. This procedure causes loss of time, but it is forced on us when the situation is uncertain and when we are not sure of the value of the contact.

THE RESERVES.

The only condition on the movement of the reserves is that, at any given moment, they must not be too far from the battlefield. As long as we are not decided as to how they will be used, defilade of their movement is the prime consideration.

DISPLACEMENT OF THE DISPOSITION.

Theoretically, and in front of an enemy in position, the disposition could displace itself by a continuous movement with only the pauses due to the march difficulties of the different elements.

But we are never certain that the enemy will not change his attitude in the course of the operation. Now, as we shall see farther on, when we are dealing with an enemy in movement the advance by bounds is forced on us.

Therefore it is advisable, when we have no reason to do otherwise, to consider this possibility and to have the advance guards and the main bodies alternate their movements.

INFLUENCE OF THE TERRAIN.

We have already examined the influence of the terrain as regards the attack of a covering disposition. Here, we have only to go into it as concerns the role of the advance guards and the movement of the main bodies.

In terrain having large compartments, observation is extensive and avenues of approach are few in number. The advance guards can reconnoiter quite widely extended fronts but they have more difficulty in advancing and must operate at greater distances. The movement will be slowed up. The main bodies will find few or no avenues of approach and it may be necessary to make the approach at night, under the cover of troops thrown forward to favorable positions during the day. In this sort of terrain, cavalry operates chiefly in front of the advance guards and there is little for it to do when the advance guards have come up with it.

Terrain whose compartments are average in size is favorable to the normal action of the disposition.

Terrain that is cut up into many compartments, or covered, facilitates the approach and makes it difficult for the enemy to establish deep and continuous lines of fires. But while it is relatively easy for the advance guards to penetrate the enemy dispositions, it becomes difficult for them to act on a front that is even slightly extended and they fulfill poorly their mission of protecting the main bodies. We are thus led into concentrating their action along the principal direction and, in compensation for this, it is necessary for the main bodies to cover themselves. The disposition should be well garnished with cavalry, and this arm thus finds work not only in front of the advance guards but also abreast of them and even abreast of the main bodies. Therefore, in this case we should strengthen the cavalry of the divisions and not hasten to withdraw it from the front.

INFLUENCE OF THE FRONT OF ACTION.

Extension of the front of action results in the same thing as an increase in the number of compartments of the terrain.

When the front of action extends, there arrives a moment when, in the Division, we can no longer insure unity of command of the advance guards. We may thus be led into constituting several independent advance guards. But this results in a tendency to diffusion of efforts and exercise of command may become impossible.

We may remedy this inconvenience by concentrating efforts along the direction of action imposed on us, and by adopting (toward the side at which liaison with adjacent units gives way) dispositions similar to those which would be made by an isolated unit. (See Chapter X).

INFLUENCE OF THE SITUATION OF THE ENEMY.

Here, we simply recall to mind that the preceding is valid only when confronted by an enemy in position. Later, we shall study the modifications that are forced on us when we are dealing with an enemy in movement.

GAINING CONTACT AND ENGAGING DURING THE WAR OF 1914-1918.

The greater part of the engagements, in 1914, were made against an adversary in movement.

In 1918, each withdrawing movement of the Germans caused, on our side, pursuit followed by regaining contact. But these operations occurred under conditions a little different from those which we may anticipate in the future. To begin with, the fact that the affair commences like a pursuit, and that we expect a prompt regaining of contact, induces us to march in a formation that bears a close resemblance to a combat formation. In addition, the fronts generally were limited; rarely do we find fronts greater than 4,400 yards per division and very often they are less than 3,300. From this it results that many of the problems are moved up one echelon and taken over by the Army instead of the Corps, by the Corps, instead of the Division. Finally, on these narrow fronts the artillery means are considerable: the division often have two divisional artilleries, sometimes three.

Therefore, it is advisable to proceed circumspectly when we attempt to draw lessons for the future from the operations of 1914. What we must chiefly seek to find in them is the character of the resistances offered by the enemy and an ensemble view of the means employed to break these resistances.

It is with this object in view that we sum up, at this point, the operations of the 125th Division from the 9th to the 11th of October, 1918, as an example of gaining contact in 1918.

/imdr
12-6-24

OPERATIONS OF THE 125TH DIVISION FROM THE 9TH TO THE 11TH OF OCTOBER, 1918. (Sketch No. 36)

During the 8th of October the First Army nearly completed the conquest of the Hindenburg position. The situation, however, is still far from clear; so, the General Commanding the First Army, for the day of the 9th, issues a conditional order, considering the two hypotheses possible:

8 OCTOBER 1918, 8:30 PM -- GENERAL OPERATIONS ORDER, No. 933.

I. - The attack has succeeded. We have captured Bellecour Ferme, the heights east of Tilloy Ferme, Rouvroy and taken Fontaine-Utertre.

II. - Tomorrow the Army will continue its attacks in the direction of the northwest and complete the debouchment east of the Hindenburg position.

15th Corps -- 1st Objective: the knoll between Mericourt and Croix-Fonsommes--Fonsommes.

2d Objective: the heights of the Bois d'Etaves--Beautroux.

The 15th Corps will march in close union with the British right, which attacks Fresnoy-le-Grand.

36th Corps. -- Will have as objective the crests to the northwest of Fontaine-Notre-Dame and the Arbre de la Motte-Marcy......

III. - In case the Germans shall have withdrawn during this night, or if the resistance tomorrow is weak, we will push on swiftly and as far as possible: the 15th Corps in the direction of Seboncourt and the 36th Corps on Fieulaine......

In reality, the second hypothesis is the one that proves the true one. So, the morning of the 9th, the General Commanding the Army makes his instructions more detailed in view of the new situation:

9 OCTOBER, 9:15 AM -- GENERAL OPERATIONS ORDER, No. 134

I. - As a result of our successes of yesterday, the beaten Germans commenced a withdrawal during the night 8th-9th......

II. - The general movement will continue rapidly in the directions given in the order of the evening of the 8th, that is to say: Seboncourt--Fieulaine--Neuvillette--Mont d'Origny.

At each regaining of contact, the attacks will be pushed sharply by the Division Commanders, without waiting for adjacent divisions.

The 126th Division operates in the zone limited on the north by the Chardon Vert--southern edges of Mericourt and Fresnoy-le-Grand--l'Ecaille--northern edge of Seboncourt--

southwest corner of the Bois de Riquerval; on the south by the line: Essigny--Croix-Fonsommes railway--Beautroux--northern edges of Etaves and Bocquiaux--crossroads 132. It has the British Army on its left and the 123d Division on its right.

On the evening of the 8th, the Division has reached Fontaine-Utertre. For the attack to be made the morning of the 9th, it has put its three regiments in line: 55th at the north, 173d at the center, 112th at the south. It has at its disposal three divisional artilleries, one of which will not follow the Division. The successive objectives are:

1st - line: Mericourt--east edge of Croix-Fonsommes;

2d - southern exits of Fresnoy--east edge of Beautroux.

The morning of the 9th, the Division finds the terrain weakly occupied and the attack becomes a simple march forward.

"Toward 2:00 PM" says the report of this Division, "we reach the line: 1,100 yards west of Croix-Fonsommes--Mericourt; but the resistance of the enemy accentuates and about 4:00 PM, our leading elements arrived at the Croix-Fonsommes--Fresnoy-le-Grand railway and the east edge of Croix-Fonsommes, are stopped by extremely violent fires of machine guns coming from the Beautroux Knoll, from the knoll to the north and from all the small patches of woods and accidents of the ground situated on the two knolls (of Beautroux) and along the edges of the Bois d'Etaves. In addition, very violent enemy artillery fires (77mm and 105mm) prevent all progress."

The Division decides to make its effort against the Bois d'Etaves, sensitive point of the area; but the maneuver ordered (outflanking on the north and on the south) is stopped by the fall of night.

At the close of the day, the front passes through the south edge of Fresnoy-le-Grand--Bocquiaux and Seboncourt.

At 7:00 AM, the advanced elements of the 55th and 173d Infantries (leading regiments) take the Bois d'Etaves (55th) amd the woods at Beautroux (not shown on map--Tr.).

/imdr
12-6-24

Then the march in advance is resumed.

From the moment of their arrival in the region of Seboncourt, the troops are taken under heavy fire by the enemy artillery and the leading elements, in debouching from the village, are greeted by the fires of machine guns coming from the Retheuil Ferme, la Marlette, Forte Ferme and from the spur to the northwest of Boukincamp. To the right, the 123d Division is stopped in front of the woods at Boukincamp (not shown on Sketch --Tr); at the left the British also are stopped in front of the Bois de Riquerval.

Our infantry maneuvers around the farms (fermes) on knoll 155, but cannot take them. At 8:00 PM, after heroic efforts, the 3d Battalion of the 55th succeeds in taking la Marlette and throwing footbridges across the Canal des Torrens.

The enemy, as it did the day before, resists in the evening after having given way in the morning. Is he going to continue his withdrawing game or has he decided to fight? We can tell only by pushing the engagement -- the more so as the resistance of the enemy to the south of Boukincamp is rather less lively.

In the evening of the 10th, the General Commanding the First Army issues the following order:

10 OCTOBER 1918, 9:15 PM, - GENERAL OPERATIONS ORDER NO. 954.

I. --At the close of the day the Army reached the general line: East of Seboncourt -- West of Bernoville -- Montigny-en-Arrouain --Bernot -- thence the course of the Oise......

II.-- The pursuit will continue tomorrow on the objectives indicated.

15th Corps. Objectives: Mennevrel, Petit Verly. Ulterior objectives: Blocus d'en haut, Knoll between Venerolles and Hannappes.

36th Corps. Objectives: Tupigny, Grand Verly

. . . .

(Part of these last objectives of the 15th and 36th Corps are not shown on the Sketch.--Tr.)

During the night of the 10th/11th, the 126th Division prepared an attack with a view to occupying the line: Retheuil Ferme --Hennechies Ferme -- rectangular wood 330 yards north of crossroads 132.

The attack starts at 5:30 AM, preceded by a rolling barrage. It is received by a very powerful barrage of German artillery and by crossed fires of machine guns which -- says the Division History -- take our troops in front, in flank and in reverse. Some detachments of the 173d Infantry succeed in penetrating into the Forte Ferme, but a counter attack forces them back to their point of departure.

Two fresh attempts, one at noon, the other at 4:30 PM, fail, as did the first.

It becomes obvious that the enemy intends to hold on the spot. Moreover, the prisoners that have just been captured state that they belong to a fresh Division coming from Lorraine whose battalions are at full strength. The engagement is terminated; a formal attack is forced on us.

11 OCTOBER 1918 - GENERAL OPERATIONS ORDER NO 963 (FIRST ARMY)

I.- The resistance of the enemy has become definite along the line: Retheuil Ferme --Bernoville -- knoll west of Noyales.

This position will be taken tomorrow by a general attack of the 15th, 36th, and left of the 31st Corps - the attack will take place at 12:00 o'clock noon.

The attack will be arranged so as to be able to rapidly progress as deeply as possible.

The directions in which exploitation is to be made are those that have been previously announced.

II.- At the same hour the 3d Corps will attempt to force its way across the Oise between Bernot and Neuvillette.

With this order, the Corps Commanders receive a personal and secret instruction giving the details of the Army maneuver.

IV. - THE CORPS IN GAINING CONTACT AND IN ENGAGING.

We are now going to pass in review the principal points of interest in connection with the decision of the Corps in gaining contact and engaging.

MISSION

We will assume that the Corps has been given the mission of moving up to the enemy, pushing back its covering dispositions and advancing as far as its principal position.

SITUATION

front, Study of the means will be a comparison between the point/ of action given and the number of Divisions composing the Corps.

Study of the terrain should be made in consideration of the front upon which a first line Division can deliver a violent attack -- and we have seen that on normal terrain this front is seldom greater than 1,650 yards per Division.

We should particularly note the parts of the front where it will not be possible for a Division to make an isolated attack without reinforcement in artillery. We shall, of course, also examine the terrain from the point of view of movements of the main bodies; successive positions and avenues of approach.

Finally, as regards the enemy (setting aside, for the moment the hypothesis of his coming to meet us) we shall endeavor to deduce his probable position of resistance from the first information we receive.

COMBINED DECISION

Successive goals. - The operation is habitually broken up into successive bounds or steps, marked out by the principal lines of the terrain. We should simply note that, in general, the Corps Commander cannot intervene with a new order at each successive step. Therefore it is desirable that his order take into consideration the entire operation from the entrance into the battlefield to the pause before the principal position of resistance.

Centralization of command. - During this first period combat is decentralized and conducted by Division. At the Corps echelon, we shall endeavor to anticipate the moment at which it will be necessary to bring back direction of affairs under Corps control. In general, however, this moment cannot be settled upon in advance. In addition, it will usually be necessary to issue a special order to bring the engagement to a pause.

Plan of maneuver. - The plan of maneuver used during the period of gaining contact and the engagement is chiefly composed of combinations of directions. The Corps gives the Divisions the directions along which they will act, consideration being given, as we have said above, to their possibilities (of action - Tr.) and to the necessity of sufficiently converging their actions.

The zone of principal effort can be determined only after we have made thorough contact. But, from the very beginning it is useful to ask ourselves where it would be under the various hypotheses as to where the enemy is. This will give us a useful guide for the orders to be given to the units in reserve (1).

Distribution of forces. - The combined initial disposition is applicable, at one and the same time to the approach march, the gaining of contact and the engagement. At the beginning, the Corps sets aside the troops it desires to use only against the principal position. The Corps may also "mortgage" the first line Divisions (i.e., direct them to hold out something --Tr.); the Regulations authorize this.

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(1) This part of the question cannot be fully treated at this time. We shall take it up later on in studying the maneuver.

But this may of doing things more or less paralyzes these Divisions and it would be dangerous to erect this practice into a general rule.

DISTRIBUTION OF MISSIONS AND MEANS

We must distinguish between the first line units and the units kept in reserve.

For the first line units, the mission should specify if we expect them simply to push as far as the first line of continuous fires and limit themselves to verifying the value of the contact, or if, on the contrary, they are then to proceed to the attack of the enemy security dispositions.

This point settled, we shall determine the directions of action of the first line Divisions, calculated as a function of their possibilities in attack and oriented by consideration of the result sought.

It is only after this that we can trace the zones of action, being careful to leave to each Division the space necessary for it to maneuver along its particular direction.

Indication of the successive bounds will then follow.

It does not appear advisable to give, in advance, additional means to the first line Divisions, but we must place the Corps artillery so that, during the engagement, it can take action to help this or that Division. To accomplish this, it will be sufficient to move the artillery in trace of the "sheaf" of directions of advance of the Divisions.

Mutual support of adjacent divisions will be attained by the trace of the directions given them, and, if need be, by an indication concerning the sense in which each of them should start the exploitation of its first breaches.

The movement of the units in reserve comes last. It depends on the avenues of approach offered by the terrain and on the zone in which the reserves must go into line if the advance is stopped.

PLAN OF INFORMATION

This plan will be formed with a view to verifying the attitude of the enemy and seeking his principal zone of resistance.

V. - THE DIVISION IN GAINING CONTACT AND IN ENGAGING.

MISSION

The Division has been given the mission of moving in advance, gaining contact and then, either verifying the value of this contact or pushing forward to the enemy position of resistance by thrusting back his covering disposition.

SITUATION

The examination of the situation will be made in the same manner as for the Corps. However, it will be advisable to arrange a plan of conquest of the terrain for the case in which we should be obliged to fight throughout the entire depth of the zone of march. In this way, when we shall meet the enemy, the decision will be all ready and we shall even have been able, during the advance, to hold out the means for rapidly passing to execution.

COMBINED DECISION

Successive goals. -- For the Division, the successive goals are not simply steps. Indeed, we should anticipate changes in the dispositions during the course of the operation. The first object will be to push forward until we meet a line of continuous infantry fires; this will be done by the advance guard or by a leading echelon. On the contrary, forcing an entrance into the enemy covering dispositions will often require putting into action the greater part of the Division, as we have seen above in the engagement of the 126th Division.

The successive steps marked out by the principal lines of the terrain should not be confused with these successive goals.

Centralization of Command. -- As long as the Division is preceded by an advance guard, it is this advance guard that carries on the fight. The Division Commander takes the affair under his own direction only at the moment of engaging -- that is to say, only for an attack intended to pierce the first front offered by the enemy. But it appears to be necessary that he take it over at this moment and that this first attempt -- which may bring about the putting in of the entire Division -- be not left to the devices of a simple advance guard Commander.

Plan of maneuver. -- Combinations of directions may be quite frequent in gaining contact: surrounding of isolated points, small flanking actions, etc.... But the greater part of them concern only small infantry units and will be arranged by the Commander of the Divisional Infantry or the Regimental Commanders.

In the Division, the principal thing is the determining of a zone of principal effort, covering, (as we have said in what precedes) the entire depth of the advance, and the examining of the measures necessary to attain this result as soon as the enemy shall offer the appropriate amount of resistance.

As to the proportion of effectives to be put into line -- as soon as we decide on an engagement with the object of pushing back the enemy security dispositions -- the infantry effectives in line must be sufficient to insure, without loss of time, lateral exploitation of the progress made along the principal direction

DISTRIBUTION OF MISSIONS AND MEANS

1st -- Up to the engagement.

The troops are divided into two echelons: advance guard (or first echelon) and main body.

Decide upon the strength, composition, mission, principal direction of action and command of the advance guard. If the front is quite extensive, give the orders necessary for constituting secondary advance guards or flank guards.

Decide upon the successive locations to which the main body of the infantry and the echelons of artillery shall move.

2d -- At the moment of engaging.

If the engagement is simply with the object of verifying the value of the contact, it reduces to an attack with limited objectives. The objective is chosen as in an ordinary attack, but we must be able to get to it by use of reduced infantry means. This attack has as chief object obliging the enemy to react, and it is our observation of these enemy reactions which will fix the value of the contact.

If the engagement has the object of pushing back the covering dispositions of the enemy, it becomes, for the Division, a true attack, to be made like the attack on a position of resistance, with, however, smaller means and an effort to make a more rapid advance.

In considering these restrictions, it would be well to turn back to what we said in Chapter III.

3d -- Stopping the engagement.

We may admit that the end of the engagement will be marked by the moment at which the infantry, by its own means, will no longer be able to exploit the breaches made by the combined attacks of artillery and infantry.

At this moment, it is likely that we shall have arrived in front of a position justifying attack with all the means of the Corps.

CHAPTER VI

THE DEVELOPMENT OF DEFENSIVE COMBAT

I -- RESISTANCE

DIFFERENT POSITIONS

The ensemble of a defensive organization does not comprise only a position of resistance and a covering position. The higher Command must have considered the case of a rupture of the first position and it has prepared, or commenced to prepare a second position to the rear, and sometimes a third position. These successive positions will present the same characteristics as the principal position proper. They are separated from each other by a distance sufficient to oblige the attack to establish a new base in general 6,600 to 13,200 yards. Usually they are not provided with permanent garrisons.

These successive positions are joined together by "switch" positions, which have as object the limiting of the progress of an enemy who may have captured a part of the first position.

The different positions and the switches connecting them form a sort of web upon which, following the requirements of the moment, the High Command traces the real position of resistance--that upon which the army is to give battle. This latter position may make use of parts of several different positions as we note in the plan of defense of the First Army in July 1918 (Sketch No 24).

THE ROLE OF THE CORPS

The instructions on the Tactical Employment of Large Units specify the role of the Army and that of the Corps as follows:

"The strength of the defensive lies in a good system of fires, judicious organization of the ground and rapid play of reserves.

It is through as complete a preparation as possible that the Army Commander can establish a powerful defense.... During the battle he intervenes by maneuvering the fires of his artillery and by employing his reserves."

So much for the Army. Now for the Corps.

"The Corps Commander devotes all his efforts to maintaining the position of resistance fixed by the Army Commander....

During the battle, the Corps Commander intervenes by maneuvering the fires of his artillery and by engaging his reserves."

This wording of the new Regulations is perfectly clear; it defines the role and the responsibility of each. The Corps Commander employs all his strength for maintaining the position of resistance assigned him. If he is beaten on it, the Army Commander must then step in.

That is very readily explained. We may, indeed, hope that the enemy offensive will not succeed all along the front at the first onset. So the Army Commander will be able to turn the flow of his reserves toward the zone which is yielding, but this maneuver is possible only if the rest of the front holds. That is why we must hold the position of resistance and also why a breach in this position should never entail, ipso facto, the evacuation of the parts left intact.

Consequently, in the Corps, the entire plan of defense will be imbued with this single idea: holding of the position of resistance.

TRACE OF THE POSITION OF RESISTANCE

We have treated, in detail, the question of the organization of the position of resistance and the covering position.

We still have a word to say concerning the trace of the principal position.

In addition to the conditions we have examined into, this trace should fit into the future intentions of the command.

If we have no hidden intention of an immediate offensive, it is advisable to make the trace as simple as possible. As far back as 1911, in his work on "Changes in Warfare" (Transformations de la Guerre) Major Colin wrote:

"The position of resistance must be continuous, homogeneous, and have no salients such as the Russians had at the Sha-Ho...". Salients indeed constitute favorable points to attack; therefore they are dangerous for the defense. We must not, of course, push this conclusion to an extreme, thereby giving up the advantage of the flanking positions which are an important element of the value of infantry fire.

But when the defensive attitude is to be abandoned during the combat, if, in a word, it is only the preparation for an attack, the position of resistance should be traced so as to furnish a favorable base of departure for the projected attack. The usefulness of a rectilinear front then becomes of second order.

PRINCIPAL PHASES OF DEFENSIVE COMBAT

As regards resistance, we may anticipate four periods in the development of defensive combat:

-- the outpost combat;
-- the period of preparation for attack;
-- the exterior defense of the principal position;
-- the interior defense of the principal position.

THE OUTPOST COMBAT (Sketch No 37)

We recall to mind that it is the duty of the command to fix the emplacements, the mission and the effectives of the outposts.

As regards the use of artillery fires during this period, it would appear that cooperation of the artillery in the outpost combat proper should be decentralized and made at the call of the infantry. On the contrary, covering of the withdrawal of the outposts should be arranged by a plan covering the use of the combined artillery in which the Corps Artillery may be called upon to cooperate.

THE PERIOD OF PREPARATION FOR ATTACK

It is chiefly by its fires that the Command can hinder the attack preparations. For this purpose, it has three principal means at its disposal: counteroffensive preparation, counterbattery and distant interdiction.

1st-- The counteroffensive preparation fires originally were intended to destroy the "departure trench" of the enemy infantry. Little by little, this conception enlarged and we arrived at the conception of a counteroffensive preparation intended to destroy all organizations useful for the attack. In order to be remunerative, such fires require pretty thorough destruction of the organizations mentioned and consequently require a large amount of ammunition.

The term counteroffensive preparation is also applied to a system of fires of limited duration executed on the probable base of departure of the enemy infantry when there is reason to suppose that this base is occupied. In this case we return to the original conception of the counteroffensive preparation and in this case heavy, short period fires are perfectly justified.

2d-- Counterbattery. In this period neutralization of the enemy batteries is not worth while. On the other hand, if we can discover some batteries in action, it is highly advisable to attempt to demolish them.

3d-- Distant interdiction gives appreciable results only when the fires are continuous and of long duration. They must reach out as far as possible in order to push back the line on which the enemy enters the battlefield, so as to embarrass his supply. Against troops they are not very effective, for troops are sufficiently "fluid" to enable them to pass around the beaten zones; but, by hampering movement of trains they can seriously interfere with the preparations for attack.

The principal objectives of these fires will be penetrating (i.e., not lateral--Tr.) roads and, in particular, the crossroads and villages. Bombarding villages is the simplest and most effective method of hindering circulation on the roads passing through them.

These fires may be commenced very early-- as soon as the enemy approaches the outpost-- and kept up during the entire period of preparation for attack. It is a question of ammunition.

To sum up: during the period of preparation for attack: continuous distant interdiction fires, destruction of enemy batteries and, finally, counteroffensive preparation fires.

EXTERIOR DEFENSE OF THE PRINCIPAL POSITION (Sketch No 38)

1st-- Stopping fires.

In Chapter II, we strongly stressed the organization of fire in front of the principal position; here we have only to give some ideas as to the conduct of fire.

During the period of combat that exists between the debouching of the attack and the arrival at the position of resistance, the main result that we can endeavor to attain--outside of stopping the assailant--is the breaking up of the attack. This disassociation of the attack can be produced in two ways--in width or in depth.

Disassociation in width will be brought about, as we have seen, by maintaining islands of resistance in front of the position of resistance. When this solution is adopted, the plan of fires will be made up to fit it.

Disassociation in depth may find an application when the attacking infantry is preceded by a rolling barrage. In this case, we know that the combination of the two arms depends on a common time-table. Should we be able to delay the infantry, the time-table will be upset and the infantry deprived of the protection of its rolling barrage. It would seem that we can obtain this result by a stopping fire of great density,falling suddenly, and kept up for several minutes on the part of the front on which we desire to bring about this disassociation. These fires may be arranged so that, on their cessation,the enemy infantry can immediately be taken under the effective fire of our own infantry.

By similar methods, we may attempt to separate the first lines of reserves, the infantry from its tanks, etc.....

2d-- Counterbattery and interdiction

The principal object, when the attack debouches, is stopping the enemy infantry.

When the means necessary to accomplish this result shall have been put in line, what is left over will be used for neutralizing enemy batteries.

Distant interdiction fires become of secondary importance at this moment. During this crucial moment they may be suspended.

INTERIOR DEFENSE OF THE PRINCIPAL POSITION (Sketch No 39)

When the attack develops, two cases may occur:

-- it will capture all of our principal position in a single rush; or,

-- it will capture only a part of our principal position.

If the attack captures only a part of our principal position, there are two principles to guide us:

The first results from our mission. We must, at all cost, hold what we still have of our position of resistance.

The second results from the fact that our own game is to beat the enemy's game. Now, we know two things. We know that the fire of our artillery can hinder continuation of the attack in depth; we also know that the attack desires to widen the breach it has just succeeded in making. From this we conclude that we must keep our artillery in place at all cost, and, in order to do that, reconstitute an infantry covering force in the zone that has given way-- this will be the role of a part of our reserves. From this we also conclude that we must endeavor to limit the damage, prevent its extension and, in consequence, bring down the mass of our artillery fire on the edges of the wound, and, above all, on the zone in which extension of the front of attack appears the most probable.

This operation can be brought about successfully only if at all times the command has been thoroughly informed of the progress of the attack. This is the business of the observation dispositions which must have been installed during the organization of the position.

But, even under these conditions, it will be difficult to secure satisfactory results unless the operation has-- to a certain degree--been anticipated and prepared.

To foresee what will happen we must put ourselves in the place of the attacker and, from his point of view, make what we have termed the plan of conquest of the terrain. This does not mean that the attacker will necessarily conform to it; but he is obliged to consider it, and should he not do so, it is very possible that the events will show that he was wrong in not considering it.

At all events, it is the only basis from which we can start. By combining the given quantities of the terrain with what we may know of the habits and tactical methods of the enemy, we can, from this, deduce a certain number of natural "bulkheads" (cloisonnements) in the interior of the position of resistance. We will organize the infantry dispositions so that they automatically lend themselves to the defense of these bulkheads, and we will prepare the corresponding fires of artillery.

These bulkheads, moreover, will have a role to play not only in the defense but also in the counterattacks, as we shall see shortly.

Of course, these bulkheads will be useful only so long as the front shall not have been completely broken. If therefore, the defense cannot hold the front assigned it, it must, at the very least hold a front. It is very likely that the attack will not progress with the same speed at all points. Also, we may foresee in advance (with approximate accuracy) the points in our line which will yield, and we can hold ourselves in readiness to reinforce their defense.

In the case in point, the word "reinforce" does not express the idea. The neologism "sedimentation" is more suitable. The procedure to be employed will often, in fact, consist in augmenting the depth of the position of resistance in the zones that are giving way rather than in increasing the density of occupation. Thus the object to be attained by the troops at one disposal will be to reestablish, first, continuity and, then, depth of the front.

If the enemy has succeeded in capturing all of the position of resistance on the front of a given unit, the object to be attained remains the same: reestablish a continuous front by "soldering it up" again to the parts of the position of resistance that remains intact. But, by the terms of the problem, it cannot be solved by the unit whose position has been absorbed; it must be taken in hand by the echelon to which the success is only partial-- and from this moment it is the same as the preceding case.

To sum up, we see that in the development of defensive combat, considered from the resistance point of view, two essential thoughts will guide the Command.

The first will be to hold, at all cost, the position of resistance assigned it.

The second will be to carefully follow the game of the attack and to ask ourselves at each moment (accepting what has happened) "what is the best thing we can do to block further development of the attack?"

The first thing to do is to stabilize the attack. That done, if we still have sufficient remaining at our disposal, we shall employ them in counterattacks to retake the ground that has been lost.

VII -- COUNTEROFFENSIVE

Before the war our Regulations made a distinction between the counterattack and the offensive return-- the first executed before the enemy reached the position to be defended, the second executed after the arrival of the enemy on that position.

The Regulations used during the war and those promulgated since have not maintained this distinction. We limit ourselves to distinguishing:

(a) immediate counterattacks, to be made automatically-- without intervention by the command-- by designated units within regiments, or under the command of the Commanders of Divisional Infantry.

(b) more important counterattacks, conceived and prepared in advance for the various contingencies that may occur, but which are to be made only with accompanying fire of artillery and upon order of the command.

(c) the passage from the defensive to the offensive for all the troops.

IMMEDIATE COUNTERATTACKS

The problem of the immediate counterattack is in great part dependent on the nature of the defensive dispositions taken up by the infantry on the battlefield. These defensive dispositions, in fact, constitute the medium (milieu) in which the partial counterattack develops, a medium (milieu) to which the counterattack must adapt itself completely if it wishes to have success.

Now, we have noted that, during the war, this medium (milieu) underwent marked changes.

Here, it is necessary to note, in a few words, the influence of this evolution on the object of and the conditions surrounding immediate counterattacks.

In 1914, as we have seen, the infantry attacked and defended in thin linear formations. The penetrating of the line at a point-- i.e., on a front of slight width-- was sufficient to threaten the entire line, for it took in flank (to the range limit of its rifles) each remaining section of the line. This crisis could be cared for only by an immediate counterattack. On the other hand, if the front taken by the enemy was not wide, weak counterattacks sufficed to reestablish affairs since the assailant, in linear formation himself, was as vulnerable as the defender. In this way, the partial counterattack forced itself on us and it could give great results. It was both necessary and profitable.

To succeed, it had to be immediate, for a check spreads rapidly along an uncovered line, and the breach could, in a few minutes, become too large an objective to be tackled by a small unit. It was necessary, then, to work fast; if not, we ran the risk of finding ourselves faced by an enemy that had become too strong, and of failing with considerable loss.

This instantaneousness of the counterattack was its principal difficulty. It could be made only if the operation had been prepared in advance.

Preparation of the movement in advance had, as in the attack, to be made by fire. This preparation could be made very short, because the assailant, obliged to place himself in a relatively dense formation, was extremely vulnerable. Moreover, the preparation by fire was not without its difficulties as soon as we made use of the artillery, because the breach that was the objective of the counterattack contained, during some time, a mixture of friendly and enemy troops that hampered precision of fire.

Finally, by the force of circumstances, the object of the partial counterattack was limited to reoccupying the breach in the front line, for, by pushing forward, the counterattacking troops would find themselves isolated and would be subjected to the action of the encircling enemy. This consequence, though perfectly apparent, was not thoroughly realized in practice, and there are many examples of troops that were sacrificed because they went beyond their proper objective.

The principal danger in the local counterattack and the most frequent cause of its failure is the instability of the situation--a situation that may change to a marked degree between the moment at which the counterattack starts and the moment at which it arrives. If, in the meantime, the enemy has developed his success and if our operation is arranged strictly according to the initial situation, the counterattack is immediately taken in flank and its failure is certain.

The counterattack--even the partial counterattack-- cannot, therefore, be an isolated act. It must be part of a combination; it must be able to count on the cooperation of adjacent troops. This will require the command to make its dispositions to assure this coordination and, in particular, to stabilize the situation in the given zone during the time necessary for the preparation and the approach of the counterattack. We cannot stress this condition too much, for the success of the counterattack depends not only on the bravery and even the skilfulness with which it is led; it is, to a great extent, a function of the general conditions under which it takes place.

Such were the conditions of the partial counterattack in 1914. Such will they still be in the future at those points of the terrain which we must keep at all cost, and where the infantry shall have taken up, or been forced by the fight to take up, a linear disposition.

The partial counterattack was also necessary in the first phase of trench warfare, during which the defender was still using a linear system in which the line was the more rigid as it had taken root in the soil. The enemy that secured a foothold in the trench profited by the protection it afforded and could remain there; his presence annoyed the whole defensive system and constituted a permanent menace to the whole line; consequently, we had to throw him out.

Furthermore, the counterattack was made easier for the defender by the existence of trenches and communication trenches which were just so many avenues of approach and which, by enabling us to make converging attacks on the flanks of the enemy, rendered it possible to progressively recapture the ground.

Finally, it was advisable to make the counterattack immediately; but here, the word "immediately" does not have the same meaning as heretofore. We could not give the enemy time to reorganize; but reorganization was not simply turning the trench that had been taken-- first and foremost, it meant connecting up the trench with the base of departure. "Immediately" was no longer a matter of minutes; it was a matter of hours and sometimes days. The conditions of execution of the attack did not change much as long as we succeeded in keeping the enemy isolated from his base of departure.

The situation is different when there is a position of resistance on which the infantry is echeloned well in depth. Capturing of the forward emplacements by the enemy does not make a breach and, in consequence, disturbs the defensive system only a little. In order to cause serious danger, the enemy must break the position throughout its entire depth. Consequently, the immediate counterattack is not automatically demanded in the forward part of the disposition.

In addition, the result of partial counterattacks in the forward part of the position is not so great as formerly. No longer is the assailant in linear formation. He has adopted deep, widely spread out formations. The disposition, at least for a certain time, has no resemblance to a line. Checks in it are automatically localized and no longer result in a menace to the whole disposition.

So, as long as the enemy has not broken the position throughout its entire depth, counterattacks by small bodies no longer are so urgently required as formerly and we cannot hope to secure the same results from them. They will not be automatic as they were in the past-- they must become an exceptional act.

The disadvantages we have just pointed out no longer exist when the enemy is on the point of reaching either the rear limit of the principal position of resistance, or one of the important bulkheads marked out in the interior of this position.

In this case, local counterattacks may be demanded and the conditions of their execution will be the same as those we have previously shown in the case of linear combat.

To sum up, when the defender has been able to oppose a deep zone of resistance, and not a linear disposition, to the enemy, the partial counterattack tends to become an exceptional procedure. It has chance of success only if the command has succeeded in stabilizing the situation sufficiently to carefully insure proper support of the counterattack. Outside of the points it is absolutely necessary to hold and considering the points at which it is sufficient to stop the enemy and maintain a continuous front-- points at which immediately available troops are few in number-- what we have termed "sedimentation" (colmatage) appears to be a procedure both more certain and more effective than the counterattack.

"A partial counterattack made against an assailant greatly superior in number, in the case of a sudden surprise attack, is wasteful of effectives and gives only small and transitory results.(1)"

In finishing, let us once more recall the conditions necessary for the success of the immediate counterattack:

(a) The counterattack will have as object the reoccupying of a point the possession of which is deemed indispensable by the command.

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(1) Note of the General Commanding in Chief for the Army Groups and the Armies on the defensive along stabilized fronts. G.H.Q. No 21,556, 20 April,1918.

(b) It will be prepared and conducted like an ordinary attack, but with a maximum of rapidity.

(c) Its objective will be strictly limited to the zone in which we can be certain of superiority of fire.

(d) Its flanks will be strongly braced up and all dispositions made to prevent any enlargement of the breach during the counterattack.

COUNTERATTACK OF THE 114th BATTALION, CHASSEURS A'PIED, ON JUNE 23d, 1916 (Sketch No 40).

We shall readily find the conditions just enumerated in the counterattack executed by the 114th Battalion of Chasseurs on June 23, 1916.

The 21st Division occupied the front between the Signal de la Caillette and the Bois d' Haudromont. During the nights of 21st/22d June and 22d/23d June, this division was relieved by the 129th Division (258th Brigade at the left, 259th Brigade at the right).

Activity of the enemy artillery had been very great for several days, particularly on the front: Thiaumont-Souville.

The front was marked out by cote 321, the Bois de la Dame and the crest to the north of Fleury.

The morning of the 23d, the 129th Division is in line. Its reserve is constituted by 4 companies of the 114th Battalion of Chasseurs (plus 2 machine gun companies) and 2 companies of the 297th. It is posted in the Ravin des Vignes.

At 8:00 AM, the Commander of the 114th Battalion of Chasseurs receives the following order from his Brigade Commander:

"The enemy is attacking very vigorously on our front. Our first line has been obliged to fall back. The 114th Battalion of Chasseurs, utilizing the communication trench and defiladed routes, will move immediately to the west of the P.C. des Quatre-Chemineés so as to take the enemy attack on its right and in reverse. The detachment of the 297th will move in the same direction in echelon (right to left), at 220 yards in rear of the left of the 2d Battalion."

At nearly the same time the Battalion Commander sees, at his right, enemy skirmishers advancing in the Ravin des Vignes and on the Fleury crest.

He then takes it upon himself to change the order received so as not to engage with his right in the air, and decides to attack the front: Froideterre--knoll to the southwest of Fleury. Consequently, he launches:

-- 3 companies (2 of the 297th, 1 of the 114th) on Froideterre;

-- 1 company on Fleury;

-- 1 company astraddle the Ravin des Vignes;

and holds 1 company in reserve.

As soon as the attack starts (shortly before 9:00 AM) the Germans move their barrages toward the rear. Then the projectiles of the French artillery again commence falling on the crests and the southern edge of Fleury.

At this time the enemy detachments which were 330 yards to the south of Fleury stop suddenly and lie down. Then, taken in flank by the crossed fires of the machine guns, they disperse, turn and finally fall back.

Toward 10:00 AM the French troops have, at the left, the line: cote 312--P.C.119, and, on the right, have arrived at 330 yards from Fleury.

Although the advance made was not very deep, this was more than simple "sedimentation", because there was recapturing of ground taken by the enemy and pushing back of the enemy line along the entire front counterattacked.

To the material profit we must add the profit in morale--a thing that the executant can neither see nor know, but which is always considerable when the counterattack has succeeded in biting into the enemy. "They had told the German soldiers that, thanks to the use of a new toxic gas, they had only to march into Verdun once the first (French--Tr.) lines had been captured. "So, when on the 23d the first line companies of the attack saw new,fresh troops advancing along the front of the rupture and saw them start the counterattack, the rumor spread that the story of the new gas was just another "bunch of b...s...."("bourrage de crane"). The discouraged troops refused to continue and the command could not get them to resume the attack..."

COMBINED COUNTER ATTACK

When the position to be defended has been broken into deeply, the offensive actions of the defense will be combined counterattacks, prepared and supported by artillery. This presupposes the putting into action of effectives of at least the equivalent of a Division.

How must we consider the combined counterattack? Is it simply an amplification of the partial counterattack, something larger, no doubt, but subjected to the same rules? Not entirely. There is a difference in object between these two procedures--and this difference in object has as corollary an essential difference in the choice of the point of application of the counterattack.

A difference in object. The partial counterattack has only one object: reestablish the continuity of a front that the enemy has just pierced. When this continuity is reestablished, its role is finished. It does not attempt to secure deep action; it is directed at the periphery of the enemy only.

Quite different is the object of the combined counterattack. By its size, its weight, it has results which the enemy is obliged to take into consideration. It is a danger for the enemy, a danger the gravity of which he cannot judge, and he must take measures to guard himself against it. So, even if it does not always obtain a very considerable tangible result, it nearly always produces suction of the enemy reserves and partly or totally paralyzes its offensive strength.

This consideration is a factor of great importance in choosing the point of application of the counterattack.

As regards this point, the partial counterattack is completely subordinated to the enemy. It is not free to strike where it wishes. It must be used to reestablish equilibrium where equilibrium is shaky. Its point of application is forced on us by the fluctuations of combat and it produces its effect only on condition that it strike exactly at this point.

The combined counterattack which aims at a deep effect--and not a superficial effect-- is much less closely dependent on the actionsof the enemy. To a certain degree, it can choose its direction and point of application as a function of the general result of the combat, and not as the result of this or that special incident. It does not endeavor to reestablish the situation on one point of the front; it is made with respect to the attack as a whole.

In particular, it is not obliged to go to the place where the enemy has put its maximum means in line-- which would be playing the enemy's game; it can, on the contrary, aim at a weak point of the enemy, and thus have all the chances on its side. In addition, moreover, there is generally no need of its penetrating deeply to secure the result desired-- i.e., stop the enemy attack. Consequently, it may more easily be anticipated in advance by the command and, therefore, be prepared in advance.

For it must be prepared, supported and led like an ordinary attack. It is on this condition only that it will produce its full effect.

In this matter, the first thing to do is to choose the "direction" of the counterattack. On this point, we have the following information taken from a Note dated in 1918 and emanating from the General Commanding the First Army:

"The Army Commander, or the Corps Commander, must first fix the direction of the attack, basing his decision on the following considerations:

1st -- The terrain over which the attack is to be made must be easy to operate over and must have no obstacles necessitating very extensive fires, which the necessity of rapidity in the preparation will not allow us to execute.

2d -- The attack must enable us to gain possession of positions that are particularly favorable for use by the enemy in the continuation of his offensive-- such as give him good artillery observation posts.

3d -- The attack must be aimed toward the flanks of the zone of enemy advance. The attack on one of the flanks, if possible, should be preferred to any other. In the offensive, the entire strength of the enemy is oriented toward the objective that has been assigned them, an objective that is in front of them; an attack debouching at this moment on one of their flanks will have a good chance of surprising them. (German counteroffensive at Cambrai; the Mangin counteroffensive in June, 1918, counteroffensive of the Tenth and Sixth Armies in July, 1918).

Also, the flank attack profits by all the organization existing in the adjacent zone not attacked by the enemy; the artillery, in particular, has all its means at its disposal (liaisons, observation posts, fires that have been registered, ammunition, etc...)

Finally, an attack making progress against the flank of the enemy will result not only in stopping his offensive, but will probably also oblige him to fall back along the greater part of his front, if he desires to avoid being shut up in too narrow a salient."

Once the choice of the direction is settled on, the rest follows of itself.

First we have the selection of the base of departure which should, if possible, have shelters and, at all events, should have communications, telephonic liaison, material and ammunition.

Then comes the reinforcing of the attacking troops by artillery, the reorganization of the corps counterbattery system for the attack; the constituting of a sufficient supply of ammunition (2 to 4 units of fire).

Finally, proper and adequate use of the air service to insure secrecy of preparation--essential condition of surprise.

All this may be effected very rapidly if the necessary foresight has been used and if the terrain has been organized in accordance therewith.

This sort of a counterattack presupposes a general situation in which the enemy, if not stabilized, is, at least, stopped or contained along his front.

This counterattack has all the virtues attributed to it only if the enemy himself has not secured a decisive result. The holding of the front, or, at the very least, the holding of a front, is, therefore, a condition strictly necessary for the success of a combined counterattack.

The considerable difference that exists between immediate counterattacks and the combined counterattack does not allow us to employ the same troops in them.

The initial distribution of the available troops, therefore, will comprise:

1st-- Partial reserves intended to collaborate in the interior defense of the position of resistance, either in executing small counterattacks, or in blinding the dangerous breaches;

2d -- General reserves, intended for executing combined counterattacks.

This advance distribution is essential if the Command wishes to reserve to itself means of carrying on the fight.

The size of the effectives necessary to execute a combined counterattack and the nature of the preparations to be made before starting it in, show that here we are confronted by a problem which usually will be within the jurisdiction of the High Command. But it is desirable that each executant carefully note his role in such a complex operation and, for this reason, it appears advisable to us to give a resume' of the counterattack of June 11th, 1918.

THE BATTLE OF THE MATZ (1)(Sketches No 41 and 42)

At the beginning of June, 1918, the Third French Army had six divisions in line along the 18¾ miles of front between Montdidier and Noyon.

Beginning with June 4th, information is full and exact concerning the imminence of a widely extended German offensive between Noyon and Montdidier. In consequence of this, the General commanding in chief orients all the reserves at his disposal in this direction.

"On June 9th, he has been able to assemble a total of 12 (Infantry--Tr) Divisions and 3 Cavalry Divisions, from reserves of all categories (Army reserves, Army Group reserves, G.H.Q. reserves); he can count upon the prompt aid of three British Divisions. These means are weak, to be sure, if we compare them with those the enemy may employ in front of us; they are, however, all the reserves available in the French Army ......

But if the reserves at his disposal are weak, on the other hand the General in Chief can distribute them just where he wants them, so exact is our information concerning the front from which the German offensive will debouch. Of the twelve divisions in reserve, only two have been kept on the left bank of the Oise as a safety measure; the ten others are established on the right bank within prompt reach of the front: Noyon--Montdidier. All the tanks of the Group of Reserve Armies, four groupments of heavy tanks (156 Saint Chamond and Schneider tanks) are likewise disposed in rear of this same front, with a view to participating in mass in the counterattacks our reserve divisions will have to execute...."

As to the Air Division," everything is prepared so that it can intervene rapidly and powerfully from the first hours of the new battle."

The morning of June 9th, the enemy attack starts on the front: Ayencourt to the Oise. Thirteen enemy divisions are in line, of which 9 are on the 11¼ mile front that extends from Rollot to Thiescourt. Their initial shock breaks the dispositions of the 58th and 125th Divisions then of the 53d Division and the 1st Dismounted Cavalry Division.

A part of the reserves is immediately directed toward the field of battle: first the 126th and 18th Divisions, then the 11th, 123d and 69th Divisions. The available elements of the Air Division (the Menard Groupment, one-half of the Division--Tr.) also receive the order to go into action.

On the evening of the 9th, the front reached by the Germans is marked out by Courcelles--Mery--St Maur--Marqueglise--Elincourt and the southern edge of the Bois de Thiescourt.

On our side, three of the front line divisions are unable to carry on the fight. Six of the divisions initially reserved are engaged or are on the point of being engaged.

The orders given for the 10th by the General Commanding the Group of Reserve Armies, aim chiefly at stopping the enemy offensive:

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(1) After the Report of the Marshal Commanding in Chief the Armies of the North and the Northeast on the operations in 1918. The Defensive Campaign, Part V.

"The General Commanding the Group of Reserve Armies once more recommends the forming of a continuous barrier around the pocket that tends to form around Ressons-sur-Matz, before thinking of counterattacking.

Hold on the flanks at all costs, so as to prevent the pocket from enlarging . . . . .

Economize on reserves as much as possible and avoid putting them in a regiment at a time: their number is strictly limited."

The 10th of June, the enemy attack is resumed, but does not advance as readily as it did the day before." In the morning, seeing our flank divisions holding tight on the sides of the pocket made by the enemy, our center divisions putting up a stronger and better coordinated resistance to the north to south advance of the enemy, General Fayolle at once decided to profit by the situation in attacking, on both flanks, the enemy who had jammed deeply into our positions from Marest to Belloy. At 10:00 AM he said to the Third Army:

"We must make a combined plan. It may be the following:

1st -- Apply the 11th Division on the right flank of the pocket in a counterattack;

2d -- Apply the 123d Division at the left, facing Elincourt, in a counterattack;

3d -- Hold at the center with the 18th, 69th, and 126th Divisions ...... "

But, commencing at 12:00 noon, our front again gives way at the right, and the 53d and 72d Divisions are brought up to the Matz at Chevincourt and Machemont.

"We could no longer count on the 123d Division for a counterattack.... General Fayolle thus found himself obliged to consider only the counterattack at the west, between Mery and Wacquemoulin, but also with much larger means than those anticipated in the morning. This solution, moreover, allowed more thorough coordination of the operation; it also simplified the preparation ......

Informed of General Fayolle's intentions, the General Commanding in Chief approved them completely; however, he considered it necessary to make the counterattack still more powerful, so as to secure a material and moral effect that would surely stop the enemy offensive. He therefore decided to place at the disposal of the Group of Reserve Armies, for the operation, two fresh divisions-- the 133d and the 148th-- taken from the Group of Armies of the North. These two units, put into trucks at the beginning of the afternoon, were hastily headed toward the region of Saint-Just-en-Chaussee'.

His project thus approved by the High Command, General Fayolle committed its execution to General Mangin .....

Beginning at noon, orders were issued for concentration of the forces that were to take part in the counterattack; orders for the complete attack were decided on at 2:30 PM, the hour at which General Mangin arrived at Noailles, headquarters of the Group of Reserve Armies. They were finally completed in the evening by General Mangin who, with his staff, established himself at Pronleroy, near the headquarters of the III Corps.

The attack was to be made by four divisions in first line (129th, 152d, 165th, 48th) supported by one division (133d) in reserve. It was to start from the base: Courcelles--Mery--Wacquemoulin, in the direction of the east so as to throw the enemy back on the Matz and check his movement toward the south. Each of the four first line divisions was to be supported by a groupment of tanks. The Air Division was to prevent the preparations for the operation from being observed by the enemy air service; it was then to accompany our infantry at a low altitude, aiding it by use of its machine guns and bombs."

At the same time, arrangements are made to consolidate the front at the left flank.

"The battle recommenced the morning of the 11th along nearly the entire front; it began at the left by a vigorous counterattack of the 11th Division, which put us in possession of Mery. At our center, the 69th Division stoutly held all its positions against a violent attack of the enemy, then, passing at once to the counter-offensive, forced the enemy back perceptibly, taking prisoners. The beginning of the day had also been marked at our extreme right by an attack of the 67th Division which, for a moment, put us in possession of Bethancourt."

During this time, to the west of Mery," the concentration of the five divisions intended for the counterattack had been made within the time calculated...."

"At 11:00 AM, the four front line divisions passed the front held by the 36th, 11th and 18th Divisions; the tanks, slightly delayed, however, by difficulties in crossing the Estrees--Saint Denis--Montdidier railway, nevertheless arrived in good time to support the infantry when it came to grips with the enemy. From then on the operation progressed with varying fortune.

At the left, the 129th and 152d Divisions advanced over uncovered terrain, where they were taken under fire by a powerful artillery previously put in position, on June 9th, in the wooded hill-group: Rollot--Boulogne -la-Grasse; the tanks were subjected to direct, well-aimed fire from distances of sometimes less than 2,200 yards. The German infantry--equally well supported by its artillery--held obstinately, and, near Mery, counterattacked the 152d Division. At the close of the day, our two divisions, despite their efforts, had gained only about 1,100 yards toward the east.

The 165th and 48th Divisions operated under more favorable conditions; the 165th, however, which drove against the Bois de Belloy and Belloy, had difficulty in progressing; it advanced slowly and it was at night only that it finally mastered Belloy and the Bois de Belloy. On the contrary, the 48th Division, engaged on easy terrain, better sheltered from the fire of artillery that had only recently been put into position, advanced rapidly in liaison with its tanks; in the evening it captured the Ferme de la Garenne and plateau 110. At its right, the 18th and 69th Divisions conformed to its movement by advancing slightly to the front...."

We have seen that the object sought by the General in Chief was "to secure a material and moral effect that would surely stop the enemy offensive."

To see if this object was attained, let us open Ludendorff's Memoirs. Here is what we find:

"The attack of the German Eighteenth Army commenced the 9th. On the right, it was directed against Mery, on the left, against the very strong positions immediately west of the Oise. The defender was prepared to receive the attack; our infantry, nevertheless, smashed in the whole of the enemy's defensive system and, in part, even pushed on beyond it, as far as the Aronde.

Beginning on the 11th, very strong counterattacks were made on our right flank, near Mery, and gained some ground.....

The strength of the troops brought into this area by the enemy induced the Supreme Command, in order to avoid losses, to order the Eighteenth Army to stop its attack on the 11th ....."

GENERAL COUNTEROFFENSIVE

The two procedures we have just studied-- partial counterattacks and combined counterattacks-- despite their specific differences, nevertheless have a characteristic in common. Both are intended to help keep a zone in which the Command, for the moment at least, does not seek decisive action (1). Conservation of terrain is their principal object; the offensive action is only a means, subordinated to this object.

But we can conceive of combat in which the roles are reversed, combat in which the defensive action is only the means of preparing an offensive action, which will arise during the course of the combat itself and take place on the same terrain. In this case, the offensive we have in mind governs the dispositions made for the defense and all these dispositions must be subordinated to the offensive idea, and made with a view to taking up the offensive.

If a Command, decided on the offensive, takes up a defensive attitude, it is doubtless because it is inferior to the enemy in means-- either because the means at its disposal have not yet come up, or, because, after all the means at its disposal have arrived, they are still inferior to those possessed by the enemy.

In the first case-- when the means have not yet arrived--the dominating idea will be to get a favorable base of departure, in front of which we will stop the enemy until we have sufficient means at hand to change to the offensive. The degree of attrition of the enemy is of relatively little importance; in any event, it does not govern the moment at which we shall resume the offensive.

The principal position of resistance will be so traced as to furnish a favorable base of departure and be equipped with this in view. The combat will be carried on so as to cause the enemy to mould himself on this position of resistance and the attack will be delivered at the proper moment.

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(1) "On June 10th, the General in Chief had to consider the most probable contingency--that of having to help our Allies (British); he had, however, to remain in readiness to take care of an attack on our own front and, for both these contingencies, he had to reconstitute reserves as rapidly as possible. Given this state of affairs, the best method of obtaining this result was, certainly, to inflict a thorough check on the enemy along the Matz, which would force him to completely stop the operations at this point....." (Report already mentioned)

Difficult as is this problem, the second is still more so. It is not sufficient, indeed, to have a line of resistance so traced as to furnish a favorable base of attack; we must, in addition, bring about a combat of attrition in front of that base-- a combat in which the means of the enemy will wear to pieces more quickly than ours and in which superiority will finally pass to our side. And there may be contradiction between the necessity of holding the line of resistance which we wish to use as a base of departure and the procedure to be used to effect necessary attrition of the enemy. The solving of this problem will often require much skilfulness on the part of the Command.

COMPARISON OF THE DIFFERENT FORMS OF THE COUNTEROFFENSIVE

Let us now try to make a resumé of what we have said of the different forms of counteroffensive we have just studied.

1st-- Partial counterattacks. Their use would appear to be less frequent than in the past; but, exceptional or not, they are none the less a combat procedure that should be kept and that must be known. They have simply the object of retaking a portion of the terrain that has been captured by the enemy; they are for the purpose of closing a breach that has just been opened by the enemy. The effect they are intended to have is superficial,peripheral; they can not be exploited. They are strictly subordinated to the necessities of combat; their direction is forced on us. Finally, in order to be successful, they must be strongly supported at either side and be launched very rapidly.

2d-- Combined counterattacks. Their object is to immobilize the enemy by throwing him back on his haunches, as it were, and to accomplish this they try for effect in depth. Their direction is relatively free. The time available for their execution is still limited, but much less so than in the preceding case.

3d-- Passing to the counteroffensive. This is a battle procedure and, like all battle, is intended to effect complete destruction of the enemy. It endeavors to exploit to the limit. Its principal characteristic is the very clear, very marked subordination of the defensive dispositions to offensive anticipation.

These differences are real. We should not, however, take them too much to the letter. Classification is only a mental point of view-- and a good deal of the arbitrary always enters into classification.

Each of these varieties of attack has some points in common with the others; and the study of each of them may furnish, mutatis mutandis (by making the necessary changes--Tr.) ideas or usable analogies in cases which, at first view, appear very different.

III -- BREAKING OFF OF COMBAT AND MANEUVER IN RETREAT

When we are able to do it methodically, breaking off combat comprises:

-- the establishing of a rear guard position;
-- the withdrawal of the main body in rear of that position;
-- the withdrawal of the covering force in contact with the enemy;
-- and finally, the disengaging of the rear guards.

The position of the rear guard must be placed at "a distance from the enemy such that the rear guards can organize their fires in this position before being attacked." This position, therefore, will generally be the first or the second line of observation posts in rear of the position of resistance.

It is also necessary that this position be such that it can be easily passed through by the main bodies. Hence, it would be a bad combination if we should place this first rear guard position in rear of a wide water course or an impassable obstacle. It should, on the contrary, be moved to the front so as to allow the main bodies to pass along in complete safety.

Finally, this position must fulfill the double requirement we have already noted in the case of outpost positions:

-- it must have sufficient observation to enable us to establish long distance fires,

-- it must have, toward the rear, exits that can be beaten by artillery fire, whenever we are unable to install ourselves at the edge of sufficiently deep cover.

The rear guard position must be occupied by fresh troops and not by infantry elements taken from first line units as they pass through. This latter system would conduce to disorder.

The density of occupation must be a function of the time during which it will be necessary to stop the enemy. But this is a desideratum to which it will not always be possible to give satisfaction.

The withdrawal of the main bodies is effected under the protection of a covering force left in contact with the enemy. The operation is organized like an approach march, only inversely. In proportion as we get away from the enemy, the movements are canalized into the avenues of departure.

It is desirable to have the rearguard position passed through at only a few points, in order to obviate the confusion that might result from the presence on the terrain of two bodies of troops having different missions.

After the main bodies have left, the withdrawal of the covering force left in contact with the enemy is usually possible only at night or when the terrain is well provided with cover.

If we have to contemplate a daytime withdrawal over open terrain, we shall do well not to count on the success of a movement made according to too minutely regulated a mechanism. The best method seems still to be calling on the artillery of the rear guard position, using long distance fire.

As regards the rear guard position itself, if the enemy succeeds in getting up to it, it will disengage itself like an outpost position. This may require that, ahead of time, we place artillery, with the necessary support, upon a position in rear.

If the enemy presses, it may be necessary to use these successive advance guard positions a number of times, thus effecting a true retreating maneuver.

To sum up, the order of the operations would be as follows:

-- determine the rear guard position and garrison it;
-- bring back a part of the artillery to it;
-- withdraw the main bodies of the infantry and the rest of the artillery;
-- disengage the covering force left in contact with the enemy;
-- place, if it be needed, an echelon of artillery on a position in rear of the rear guard position;
-- disengage the rear guard position.

RETREATING MANEUVER

"The defensive may comprise a retreating maneuver which has as object retarding the advance of the enemy. This maneuver is built upon the use of successive echelons installed in advance, each echelon withdrawing on the one in rear after it has accomplished its mission. Artillery, cavalry and air service are the principal elements of the retreating maneuver; breaking off of combat usually takes place at night."(Instruction on the Tactical Employment of Large Units, No 144).

In general, the retreating maneuver comprises a series of limited resistances made on successive positions, and,consequently, the installing of covering dispositions alternating with breakings-off of combat. Everything that has been said on these two subjects, therefore, is applicable here. It will be sufficient to note some special points.

The echelons are installed in advance. This rule applies to the first two echelons, at least, which should be completely ready at all times. This precaution is necessary in order to provide against a possible misadventure of the echelon in contact with the enemy. Thus we can not count on using the first line units to constitute the second or even the third position. The retreating maneuver gives its full fruit and can be kept up for some time only if we succeed in avoiding coming to grips with the enemy. Here we again find the same difficulty we have already come across in studying the outposts. Withdrawal becomes very difficult indeed when the defender finds himself subjected to the system of fires of the attack.

If we attempt to go a little deeply into this question, we will note that the delay inflicted on the assailant divides into two parts:

-- the first part is used by the assailant in making his preparations for the attack and gathering the means of which he will have need;

-- the seoond part is devoted to the attack itself.

The first part is unquestionably the longer; we may easily verify this by going back to the example cited above--the operations of the 126th Division. The second part adds only a very small amount of time.

In the retreating maneuver, as in the case of the outposts, the moment for withdrawing cannot be left to the judgment of the commander who is in contact with the enemy. He must be given the mission of holding a certain length of time determined in advance, either up to a certain hour, or until the enemy shall have gained such and such a line.

By acting in this way, we may, of course, be induced to withdraw from an enemy who has merely made a bluff of attacking. This would be a danger when the object of the retreating maneuver is to coax the enemy to follow us. We have, to be sure, no way of making the enemy follow us; but we should at least be able to find out if he is not following.

So, when the withdrawal is made before the enemy attack is made, it must be made in two stages: at the announced hour we will withdraw the greater part of the troops of the first position, but we shall leave in place certain elements charged with maintaining contact, and the period of delay ordered for resistance on the following positions will commence to run only at the moment at which the enemy shall have entered the first position.

CHAPTER VII

DEVELOPMENT OF OFFENSIVE COMBAT AGAINST AN ENEMY IN POSITIO (1)

I GENERAL ASPECT OF SUCH COMBAT

Let us once again pass over to the side of the attacker and ask ourselves: "What are the means to be used to break a position of resistance organized and defended in the manner we have just considered?

In succession, we shall have to pass through:

-- a covering position, more or less deep, characterized by relative weakness of the means of action put into line;

-- a position of resistance to which the defenders have devoted the maximum of the strength at their disposal and on which the combat will attain the maximum of intensity and development;

-- a zone, more or less deep, in which we shall run into resistances having the object of protecting the enemy's breaking-off of combat-- resistances that are perceptibly of the same characteristics as those of the covering position.

Thus the assailant will have to solve three different problems:

-- rupture of the covering position, the act of the engagement;

-- rupture of the position of resistance, the act of the attack, or attacks, proper;

-- rupture of the rear guard positions, the act of the exploitation.

These three acts which constitute the battle proper, are themselves bracketed within two special periods:

-- one at the beginning of combat: the approach march and gaining contact;

-- one at the end of combat: the loosening of contact and the pursuit.

Here we are speaking of a theoretical evolution. Real combat does not always take on so symmetrical an aspect. Consequently, we must seek to find in this process chiefly a series of guiding points intended to facilitate identification of the true situation. The function of the plan for information is exactly for the purpose of determining the differences that may exist between what we might term the normal evolution of combat and its actual evolution. In this way, the Command may be warned in time concerning the greater or lesser accuracy of its hypotheses , and orient its battle to correspond.

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(1) For historic examples of the questions studied in this chapter, we refer readers to the Course in History, and, in particular, to Commandant Lanoix's study of the 22d French Division in the Champagne offensive (26th September, 1918)

GENERAL ASPECT OF THE COURSE OF THE COMBAT

Since the resistance beyond the principal position of resistance appear to be of the same sort as those encountered on this side of it, the same procedures may be employed in overcoming them. Therefore, beyond this position, we go back to decentralization of combat by Divisions and to action along directions.

From the corps point of view, the combat would divide itself into three phases, thus:

Engagements: action along the (given-- Tr.) directions

Attacks: Methodical and progressive conquest of the terrain; action toward objectives.

Exploitation: action along the (given--Tr.) directions

As to the 1st line Divisions, in the first and third phases they act along the directions fixed-- using their own means and not waiting for one another. In the middle phase, on the contrary, in cadence with and influenced by the operations of adjacent divisions and by the additional fires temporarily placed at their disposal.

We have seen, in what precedes, how we can recognize the end of the first phase. Now we must see where the second (rupture of the position of resistance) terminates.

We used to say that the artillery formed the framework of the line of battle. With the growing importance of fires this phrase is truer than ever. In particular, when it is the case of defense, as long as the artillery system has not been disorganized-- either taken or, at least, obliged to withdraw-- the defender can hope to hang his infantry resistance on it. It was in this way that in March of 1918, the deploying of a powerful line of artillery to the west of the Avre marked out the dike against which the German offensive broke. We should, therefore, consider the zones of artillery emplacements as incorporated in the principal position of resistance.

This indicates that the plan of attack must be direct toward methodical conquest of all the terrain from the line of contact to the artillery zone inclusive or at least a large part of this zone. This zone moreover, is easy to determine, since the engagement must have obliged the enemy to reveal a part of his batteries-- and a very rough approximation is sufficient for the object we have in mind at the present.

So the last objective of the methodical attack will be marked so as to include a considerable portion of the enemy artillery emplacements.

Beyond this last objective, we should be able to hope to enter into the period of exploitation. This hope will perhaps not be realized; but it is advisable to give ourselves the possibility of getting something from a favorabl situation. Now if our hopes are not realized, we shall hav the time to plan another attack, whereas if our calculation are correct, it is indispensable for us to immediately push the advantage gained.

So the plan of attack will comprise two parts:

-- a first part, directed toward methodical conquering of the terrain from the line of contact to the artillery position, inclusive, or at least, as far as a line including the greater part of this position;

-- a second part, directed toward exploitation of the success, and for which the plan reduces to the indicating of directions of action for the 1st line units.

THE SITUATION AT THE END OF THE ENGAGEMENT

In a preceding chapter we have studied the first phases of offensive combat against an enemy in position: entrance of the battlefield; approach march and gaining contact, engagement and advance to a line that is, or appears to be, the position of resistance of the enemy.

If we consider the situation of a first line Corps at the moment these preliminaries finish we shall find:

-- first line divisions, habitually acting on a wide front and having put into action a quite large part of their means for the attack on the enemy covering positions;

-- relatively large reserves of artillery and infantry.

In addition, and farther in rear, the Army has reserves, principally artillery, also at its disposal-- a part of whic may be placed at the disposal of the corps.

It is now time to go on to the attack of the principal position.

THE PLAN OF ATTACK (Sketches No 43 and 44)

We shall not, at this point, turn back to the details concerning the making up of a plan of attack, this question having been thoroughly gone into in Chapter III. We shall content ourselves in stressing certain points we have been unable to get at up to this moment.

First of all, it is not possible to attack with means as lacking in strength as those we have put into line for the engagement. The enemy is strong and he has an excellent organization of fires. To crush him, powerful means will be necessary. Therefore we shall put new troops into line. The Corps will call on its own reserves, and on the reinforcing artillery that the Army places at its disposition.

In the second place, rupture will require a large increase in the amount of fires, consequently the constituting of considerable supplies of ammunition. But we shall not be able to have this supply on the evening of the engagement; to get it up requires time . To handle the fires of the mass of artillery, we must have a well-arranged syste of transmission, observation posts, shelters of some sort, etc . . . still more time needed.

So we end up by finding a number of operations necessary, which operations may extend over a period of seven days.

But are we not to fear that while leisurely making all these preparations, we shall give the enemy an opportunity to reinforce himself? Would it not be better to attack at once in order to profit by the effect of surprise?

It is undeniable that there is contradiction between the "surprise" element and the "preparation" element: and by preparation, we mean the "preparations" for the attack as well as the "preparation" by the artillery. The whole war has been an attempt to compromise between these two necessities, and it is worth while-- in trying to clarify this question-- to briefly go over the various ideas on this subject.

EVOLUTION OF IDEAS ON THE SURPRISE ELEMENT DURING THE WAR

The instruction of December 16th, 1916, seeks success less from surprise than from the power and speed of the attack.

In this conception, preparation by the artillery plays a preponderant role. It is considered as being the first act of the attack. It must be complete: "the artillery must destroy the defensive organizations of the enemy". The attack proper--the infantry attack--will be launched only when" the necessary results shall have been obtained. . The Commands of the large units must check up on these results. They are responsible for them. . . The moment at which an attack can be delivered , cannot, therefore, be fixed long in advance,this moment depending on the state of advancement of the preparation, atmospheric conditions, etc. ...."

In a word, the attack is governed by the preparation.

A new tendenny commenses to crop out in the Instruction of October 31st, 1917. The principle of surprise is brought into the spotlight. Only surprise is divided into two kinds of surprise: tactical surprise and strategical surprise.

Tactical surprise is not yet sought in sudden delivery of the attack. We desire only "to surprise the enemy by the choice of the exact moment, and the front, of the attack and overrun him by rapidity of execution so he can use neither his fires nor his local reserves under favorable conditions." Thus we still have the "speed" and the "power" of the Instruction of December 16th, 1916.Consequently, preparation by the artillery is still going to be the governing condition of the attack; but, already, this condition has become a less insistent one; it would seem that the mere using of the word "surprise" had been sufficient to make a change of some sort.

So, in reality, while the Instruction of 1916 unreservedly prescribed "destroy the enemy organizations", the Instruction of 1917 affirms that the chances of success of an offensive" lie as much in surprise and neutralizing actions at the moment of attack as in attempting to effect complete destruction of enemy batteries, organizations and observation posts". It is thus induced to class into two groups the defensive organizations: one group, the enemy wire; the other, the remaining defensive organizations. Destruction of the enemy wire is forced on us: "it is important that no infantry attack be delivered before the necessary breaches have been made . . . . As regards the other organizations, we must destroy their essential parts, but it is fallacious to endeavor to effect complete demolition. The Division Commander makes up for this by neutralizing fires and by an attack mechanism by which the enemy can be surprised and taken in his works or shelters."

The attack, therefore, can no longer be definitely put off on the pretext of insufficient destructions. The duration of the artillery preparation will be susceptible of being calculated. However, as errors are possible, a small door is left open to take care of the possibility of holding up an operation: "When destructions of the wire are insufficient, the Division Commander so reports to the Corps Commander, asking him for the time and the means necessary to complete them."

Thus the principle of an entire complete preparation is shaken and it no longer is the absolute requirement it formerly was.

But there is something more.

All that we have just said applies to tactical surprise. Now, "surprise is tactical, or strategical . . . strategical surprise may be attained when an attack is launched after a rapid and secret preparation on terrain where the enemy can neither intervene with his general reserves, nor execute preventive maneuvers." This surprise they count on obtaining by multiplying offensive actions, but they are careful to add: "In certain cases, the effort to obtain strategic surprise may be the primary element of the preparation of an offensive action"

Thus, they leave us to contemplate two types of attack.

-- an attack after a more or less long preparation.

-- surprise attacks, in which we will more or less abandon the idea of methodical destruction of the enemy's means--consequently, attacks after a limited artillery preparation.

The Instruction of October 31st, 1917, limits itself to enunciating these two procedures, without siding with either one. Less rigid than the Instruction of December 16th, 1916, which admitted of no attack without complete preparation, less rigid also than Directive No 5 which admits of only surprise attacks-- it is a transition period, a waiting period Instruction. In 1918, a new orientation is given on July 12th, by a new Instruction emanating from G.H.Q. and bearing the name of Directive No 5.

Its object is to orient the command upon the practical working of simple, audacious and rapid attack procedures, intended to secure rapid and deep advance through the enemy dispositions, both for the rupture of organized positions and for maneuvers in the exploitation.

Directive No 5 adds: "While waiting for the Instruction of October 31st, 1917, on the conduct of large units in battle to be brought up to date, this Instruction will be considered as a collection of technical information from which the command is free to choose-- basing itself on the more general information of the present Directive -- the special elements of which it has need for preparing and conducting the impending offensives."

"Simple, audacious, rapid procedures." What are these?

"The conditions essential to the success of an attack" states Directive No 5, " are ":

-- the instruction of the command, of the staff and of the troops;

-- secrecy in preparation;

-- surprise in delivery;

-- rapid execution and deep development;

-- immediate and extensive exploitation.

On the question of surprise, Directive No. 5 takes a definite position:

"Tactical surprise will be secured by the suddenness of the delivery of the attack:

-- due to as short and violent a preparation as possible or,

-- without preparation, due to rupturing action of tank opening the way to the artillery and infantry.

Debouching at day break, or even before, will generally be in order."

We are at the end of the evolution. This time, we see surprise put in the very first place, and the Command resolutely decides on the measures necessary to attain it. It demands suddenness in the delivery of the attack. It is, therefore, the total suppression, or the reduction to a very short duration, of the artillery preparation. This consequence was inevitable." Methodical destruction of the means of defense of the adversary by the artillery requires a considerable time. It does not permit surprise effects". It was necessary, then, to choose. Now it is done. The preparation will be subordinated to the attack; and a preparation of limited, sometimes very limited duration is substituted for the preparation of indeterminate duration.

Merely noting an evolution is not sufficient; to grasp its effect and its more or less definite character, we must endeavor to understand the reasons for it at least the salient reasons. What, then, has happened?

Are we confronted by the appearing of a new principle? No. Usefulness, necessity of surprise have never been questioned. No more is the usefulness of a suitable preparation questioned. The antagonism of these two principles has been long known. The point is-- what share of consideration shall we give each of these? As we yield to the "surprise" tendency, we approach the 1918 solution; as we yield to the "preparation" tendency, we approach the 1916 solution.

But from 1916 to 1918, new factors entered into play: superiority in number, appearance of tanks, very marked development of rapid-fire heavy artillery, increasing attrition of the adversary, the will of the Command to force operations at a faster and faster gait. It would have been incomprehensible had this growth in means not been accompanied by an accentuation of energy in the methods of war and a parallel evolution in the choice of combat procedures.

And, at the same time, Directive No 5 comes to us, not as a final rule, but as a measure for the time being. The solutions it set down were applicable for a given moment of a given war. It would be dangerous to apply them, without precautions, to entirely different situations.

So, the problem of the antagonism between surprise and preparation cannot be solved in a general and definite fashion. In each case it must be weighed and discussed by the command.

II. THE INCIDENTS OF COMBAT

THE DEPARTURE OF THE ATTACK

Two great difficulties are to be anticipated at the moment of departure of the attack: counteroffensive preparation fires and the passage through the barrier of fires.

The counteroffensive preparation fires cannot generally be avoided: for that it would be necessary to have obtained absolute surprise. Now, in an attack such as we have in mind-- an attack succeeding the engagement-- the enemy will usually be on his guard. We may deceive him as to the zone or hour of attack; but it would be unlikely that he should not be expecting to be attacked.

We must, then, undergo the counteroffensive preparation fires, and we see only two possible palliatives:

-- arrange improvised shelter for the troops where the terrain itself does not provide sufficient masks. Much can be done in the course of one night, provided that the troops have not been put in position at the last moment;

-- provoke premature delivery of the enemy's counteroffensive preparation so as to determine not only the batteries that are firing, but also the zones on which they are particularly directed.

The second difficulty-- passing through the barrier of fires-- is most serious, naturally, for if it be not overcome, the attack will not be able to get forward. So, it is not sufficient to say that the assailant must gain superiority of fire.

Let us see what it is in reality.

The elements that furnish this barrier of fires are composed:

-- of infantry,

-- of known batteries,

--- of unknown batteries in position in rear of the front attacked.

-- of unknown batteries placed outside of this front.

We may count on the infantry's being neutralized by the accompanying and protecting fires of the attack.

The known batteries will be subjected to destruction fires before the attack and will be subjected to neutralizing fires at the moment of the attack.

To take care of the unknown batteries showing up behind the front attacked, the assailant will have reserved a certain number of batteries, ready to intervene. But if the new enemy batteries are numerous, a certain amount of time will be necessary to pick them up and their neutralization can be, only progressive. If, then, at the moment of the attack, we have little information on the enemy artillery-- and we shall know this by comparing the number of batteries known with the theoretical figure corresponding to the effectives put in line by the adversary-- the debouchment of the attack will be much slowed up. In certain sectors the troops may advance, but in others they will be held up for a greater or lesser period of time. We must figure out the first objective so as to give the fighting line the opportunity to weld itself together.

As regards the unknown enemy batteries showing up outsi the front being attacked, the best means of preventing them from intervening is, still, to oblige them to fire straight to their front. This is possible only if we can give the enemy the impression that he is attacked along all of his front, while the real effort is made against only a par of this front. We are thus induced, as we have already seen (Chapter III), to have the principal attack preceded, o accompanied, by complementary attacks having the chief obje of distracting the attention and activity of the enemy.

So, we cannot count on gaining complete superiority of fire. We should calculate, in advance, the degree to which we can gain this superiority of fire. The less we know of the situation, the more shall we have to have recourse to auxiliary combinations: split up the attack into shorter steps, accompany it by side attacks, change the point of pressure alternately and suddenly from one point to another-- all with the object of unmasking the enemy artillery and giving ourselves the time to take care of it, without too many losses and too many checks.

CHECKS

However carefully the attack may have been prepared, checks are possible-- either through the attack being stopped by fire or thrown back by an enemy counterattack.

To begin, let us examine into the first case. In it we can determine a certain number of degrees:

-- the attack has been simply slowed up;

-- the attack has been partly successful;

-- the attack has been checked along the whole front.

If we consider the simple slowing up of an attack as a check, it is because, in practice, it runs the risk of not being noticed; the success obtained shines out brightly and we forget that it is not sufficient to merely succeed--we must succeed within the allotted time. If we do not accomplish this the delays accumulate, time passes and soon we find that the operation is irremediably compromised.

In the case we are considering, the problem given the Corps is the rupture of the enemy position of resistance. Now, when studying the defense, we showed the necessity of holding until night; in fact, it is during the night only that it is possible to reestablish a compromised situation. Conversely, the attack will gain real success only on condition that it finishes its attack during the day. This necessity imposes a certain cadence on the operation. This cadence must be studied in advance and we must depart from it only within acceptable limits. The Command, therefore, must watch over the general gait of the operation and intervene so as to increase it, if it notes a slowing up that threatens danger to the final success.

The attack has partly succeeded, partly failed. To measure the importance of this check, we must compare it with the anticipated development of the operation. We know that this operation develops through successive efforts applied at different points. If it were a matter of progressing beyond the point we have been unable to reach, the question would not come up. But if it is a matter of progressing along side (the point-Tr.), the results attained may be sufficient to enable us to immediately start the second part of the attack. In the case under consideration, it is this solution which is to be preferred. If not an application it is at least an extension of the old rule: reinforce where you are succeeding. By operating in this manner, we shall have the advantage of keeping in step with the general cadence of the operation: in addition, the success of the second attack may have a repercussion on the first attack and aid in overcoming the difficulty that has stopped it.

If the attack has failed everywhere, or if the lack of success is so great that we cannot continue the operation we must resign ourselves to starting it anew. In this case, say the Regulations, we should try to ascertain the causes of the check before recommencing the attack.

If the attack has been stopped by the fire of the enemy, it is because we have been unable to gain superiority of fire over him-- due to either insufficient knowledge of the emplacements of the enemy's organs of fires, or to lack of necessary means on our part.

If the check is due to lack of knowledge of the enemy elements of fire, this lack has very likely been supplied to some extent during the course of the first attempt-- we should be able to recommence with a more exact and more effective plan of fires. If not, we must go back to the precautions indicated at the end of the preceding paragraph, when we were seeking measures suitable for palliating the dangers resulting from too great ignorance on the subject of the enemy artillery.

If the check is due to lack of sufficient means, we must try to further cut up the operation into successive slices that are smaller and more easily handled.(See following, Chapter IX, example of the 6th Corps in the attacks of April, 1917).

Many checks result from faults in combination of the infantry and artillery, and, in particular:

-- incomplete neutralization of infantry positions which are dangerous for the/ assailant;

-- attacks developing in portions of the terrain on which the artillery can not fire easily-- where it cannot use observed fire in support of its infantry.

We believe these two points have been stressed sufficiently to show that an attack launched under such conditions runs great chances of failing. There is, therefore, no reason to expect that a second attempt will give more results than the first attempt. We must make a completely new plan.

ENEMY COUNTERATTACKS

When the attack has not been stopped by fire, it may be thrust back by an enemy counterattack. The necessity of preparing against these counterattacks and replying to them must, then,be one of the first cares of the command.

In order to determine the correct course of action to pursue under this circumstance it is advisable for us to recall the conditions of success of a counterattack. The two principal ones are, we have said:

-- non-enlarging of the breach in the defender's dispositions;

-- reliable support by fire.

These two conditions point us the direction in which we shall find the parry for counterattacks.

The immediate enlarging of the breaches made in the position of resistance is demanded, therefore, not only-- as we have already said-- to facilitate continuation of the progression, but also to hamper the eventual counterattacks of the enemy.

As regards support by fire, the counterattack must choo its ground so as to secure the best conditions for such support. Certain it is that this theoretical requirement is frequently violated--witness the German counterattack launched against Juvincourt on April 16th, 1917. If favorable opportunities present themselves, we shall profit by them; but it is well to be able to count on something else besides the faults of the enemy.

When a counterattack of the enemy is reported, there is sometimes a great temptation to send reinforcements to the threatened zone. The solution is not there. Attacks are stopped by fire; counterattacks also are stopped by fire.

The barrier of fires is not easy to establish unless we have thought about it in advance, and it cannot always be established on any piece of ground whatsoever. Everything that has been said for the defense again finds an application here.

Therefore, if we fear a counterattack, the troops, as soon as they arrive, must be ready to defend themselves. This is possible only if we have traced the objectives so that the troops can easily organize in front of them a barrier of combined fires of infantry and artillery. This necessity-- which induces us to keep the troops on the reverse slope-- is in conflict with the idea of continuing the offensive , which, on the contrary, would require occupation of the military crest in front of the observation posts. We are obliged to choose between the two. But, so long as we are working in the interior of th enemy's position of resistance, it is scarcely prudent to try to directly cross the crests. The best scheme seems to be, therefore, that the elements having to pause for some time limit themselves to placing observing elements at the crest they have just reached, and place their barrier of fires this side of the crest.

The recapture of terrain lost during a counterattack is obligatory when this terrain is necessary for the later development of the combat.

Two cases may occur: either the counterattack has entered into the barrier of our effective infantry and artillery fires or else it has stopped of its own volition short of our barrier of fires. In the first case the enemy counterattack troops have been broken and we may hope to easily take care of them. In the second case, on the contrary, we have very small chances of succeeding for the enemy has very likely assured himself of superiority along the line on which he stopped.

It sometimes happens that combat rages around a point that is alternately taken and lost-- but never passed-- by the two parties. Such were the Maslowed Woods in 1886, the debouchment of Gorze in 1870, Manjuyama Hill in the battle of Liao-Yang, Vanquois, the Chemin des Dames, the Moronvilliers Heights, the Harmannsvillerskopf, etc ...... in the late war, and, on a larger scale, Verdun in 1916. The point has greater or less intrinsic value, bu the combat of attrition which goes on at the point may take on considerable importance. We shall again come across thi situation in studying maneuver in Part III.

For the moment, the essential point to remember is th the parrying of counterattacks is a defensive act to be prepared in advance. Offensive combat, therefore, does not consist of a simple movement in advance. It comprises very clear alternating of bounds in advance and pauses in a defensive situation.

III - EXPLOITATION AND PURSUIT

EXPLOITATION (Sketch No 45)

With the rupture of the enemy's principal position of resistance we have passed the culminating point. Logically, the enemy resistances should become less and less, and it is this progressive decrease that will characterize the new phase of the battle into which we are entering. Therefore we shall see appear -- with, however, certain delays rendered necessary by the uncertainties of the situation -- phenomena the converse of those we noted in the first part, i.e., diminution of effectives in first line, reconstituting of reserves and progressive decentralization of the conduct of combat.

The Regulations give this new phase the name of "exploitation."

Maneuvers in exploitation are of two species:

-- direct exploitation, in depth, turned over to the initiative of the executants;

-- lateral exploitation, having the object of keeping up the width of the front of attack and, in consequence of this, enabling continuation of the exploitation in depth. Lateral exploitation requires the intervention of the higher echelon, whenever the operation interests two adjacent units.

In practice, how is all this going to be organized?

After the rupture of the position of resistance and, in particular, after the dislocation of the enemy's artillery system, the value of the resistance will very likely be not greater than that offered by a covering disposition. From this moment on, the same procedures will again become proper; they are, we have said: decentralization of command, action along directions and the reconstituting of reserves.

We have, in the preceding, shown the reasons for which action along directions must be substituted for the attack of successive objectives.

However, within the Division -- contrary to what we have said in the case of the attack of a covering disposition -- we should not limit ourselves to having the infantry alone make the enlargements of the breaches obtained by the combined attacks of infantry and artillery. No longer is it a case of advancing until we find a serious resistance and then stopping in front of it. What we want to do is to crush the last resistances of the enemy. In order to do that we must advance along the whole front of action of the division and put the necessary effort into it.

Should the exploitation run into reinforced resistance after a certain time or should the enemy react in counterattacks, the command will be able to again take over the directing of combat only if it has quite strong reserves at its disposal. Now, it must have put everything into line to capture the principal position of resistance. We must not forget that such an effort cannot be prolonged indefinitely; as soon as the obstacle that required this effort has been overcome, it is advisable to contemplate reconstituting of reserves, if need be, by drawing back troops that are engaged In a movement in advance this operation can be performed without difficulty; it is sufficient to progressively diminish the zone of action of the unit to be relieved.

To sum up -- once we have smashed in the position of resistance, the action will again take on the characteristics it had during the period of the engagement and this will be evidenced by:

-- at the Corps echelon -- by reconstituting of reserves, decentralizing of command, and indicating of directions of action for the first line divisions;

-- at the Division echelon -- by the executing of successive actions directed along the announced directions of action; the enlarging of breaches being, according to circumstances, accomplished sometimes by infantry only, sometimes by combined actions of infantry and field artillery.

Exploitation will thus develop itself in a series of successive blows, each Division working in its sector -- the Corps commander intervening only when the holding-up of one Division risks compromising the advance of the adjacent Division.

PURSUIT

Finally, the combat continuing its evolution, the contacts with the enemy will be lost here and there, the resistances will thin out and become less long. The Divisions that are following the enemy will soon increase the gait; the successive attacks will transform themselves into simple successive bounds. We shall return to the approach march formations, proceeding in a sense converse to what we did before the engagement. Little by little we shall see the Divisions open out from one another, echelon themselves in depth; then advance guards will detach themselves, while the main bodies will condense themselves in the rear.

It is the pursuit commencing.

The pursuit is the last stage of a successful offensive operation. It is the job of the cavalry and the advance guards.

As soon as large holes are produced in the enemy's front, the cavalry profits by them to move to the front and seek more distant contacts. Beginning with this moment and except for the strength of the advance guards, the cycle is completed and we are back at the point from which we started.

If the enemy opposes, if a new resistance occurs, the combat will commence under conditions similar to those we have just brought out.

12-11-24
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CONCLUSION

Let us glance over the ensemble of our combat.

We see that the engagement of the forces in it follow a double progression, increasing first, than decreasing. The mass of the forces, held out at the beginning, passes, little by little into first line for the culminating effort, then, this moment being past, the first line progressively impoverishes itself to the profit of the reserves.

We have picked out five principal "measures" in this progression:

-- the action of the advance guards to gain contact;

-- the partial engagement of the first line Divisions to verify the value of contact and insure that they have a favorable base for attack;

-- the entrance into action of all the strength of the Corps for the attack on the principal position;

-- a first reduction of the effectives in first line during the period of exploitation;

-- a second reduction of the effectives in front line for the change to the pursuit.

The conduct of the combat has changed hands progressively, following a similar cycle. At the beginning, simple incidents taken care of by the Commanders of the advance guards; later, engagements handled by the Division Commanders; then a regular attack, organized and directed by the Corps Commander (sometimes even by the Army Commander); finally, the position of resistance having been forced, the conduct of combat successively passes back into the hands of, first, the Division Commanders, then, into those of the Commanders of the advance guards.

To sum up, we see vary in the same sense the value of the enemy resistance, the size of the effectives put into first line and the degree of centralization of combat. The dominant fact, the one that governs all the others, is the changes in the resistance of the enemy, that is to say, the variations in the value of the contact.

IV - AIR SERVICE IN THE BATTLE (1)

Under its present conditions as regards technique and power, the air service, on the field of battle, can play only a role complementary to the one played by the other arms. Its instability (fragilite') forces us to use it only with a view to securing important results; and the intermittence of its action requires that we use it at favorable moments.

As a basis for calculating the output of the air service, we shall assume that each airplane can keep in the air from one to two hours and make two flights per day.

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(1) The points brought up here should be considered chiefly as a basis for study and discussion.

12-11-24
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Air service on the field of battle may be given four sorts of missions:

-- air observation;

-- protection of air observation;

-- attack of enemy air observation;

-- attack of ground objectives.

In each of these cases it is advisable to ask of it only that which cannot be done by the other arms. This will be easy for us, now, for our previous studies have brought out in relief the principal difficulties met in trying to combine the efforts of infantry and artillery on the field of battle.

AIR OBSERVATION

Up to this time we have endeavored to build up our systems of attack and defense by depending chiefly on ground observation. In fact, it appeared to us to be important to attack the problem at its easiest point. But it is evident that that method cannot be applied always, nor everywhere. If, by judiciously cutting up the terrain, it is possible to succeed in sensibly reducing the gaps in ground observation, we shall never succeed in completely suppressing them.

Moreover, we can make use of ground observation only against the enemy infantry. The enemy artillery will almost always escape our view. It is "within the jurisdiction" of air observation only.

Air observation is performed by the balloon and the airplane.

The field of observation is a function of the observer's altitude and his situation with respect to the front. An airplane flying at 2,200 yards sees all slopes of less than 20% within a radius of 6,600 yards. If we go back to the information already given concerning attack and defense dispositions, we shall see that this distance of 6,600 yards beyond the front line about corresponds to the observation necessities of the artillery airplane. The part that topographical accidents of the soil play is therefore much reduced as concerns the air observer. The questions of visibility, on the other hand, takes on great importance, and, for a given (degree of--Tr) visibility, there exists a line up to which we must go in order to discover what we wish to see of the enemy. We believe that it is of interest to know this minimum line, for, as we shall see, it will be more difficult to protect in proportion as it is pushed farther in the direction of the enemy. We cannot calculate it in advance, for it varies with the state of the atmosphere. Therefore it is necessary to secure this information from the air service.

Thus we shall have the line back of which our air service must not be pushed if we want it to cooperate in the projected operation.

PROTECTION OF AIR OBSERVATION--THE AIR FRONT

How shall we assure the functioning of air observation along the line we have just determined, i.e., how shall we constitute a sort of air front? This will be the role of the pursuit aviation acting in combination with the anti-aircraft defense.

It may seem strange to speak of "front" in designating a system susceptible of vanishing at once under the pressure of superior enemy attack aviation. But we have seen that this air service can remain in the air only an hour or two. So, the storm once past, the "front" which had to disappear, reappears almost instantaneously. A certain (degree of--Tr) permanence of air observation, therefore, is possible, and it is sufficient to merit the expression we propose, or some similar one.

The air front may be this side of, or beyond, the ground front. Practically, the amplitude of these oscillations is limited, first, by the range of the antiaircraft defense and, secondly, by the fact that the pursuit one-seater can go into the enemy lines but little farther than a distance double the altitude at which it works; beyond that distance it is under unsatisfactory conditions for fighting. The protecting patrols of artillery planes, operating between 2,200 and 2,750 yards, may, therefore, reach in 4,400 or 5,500 yards. The high patrols, it is true, can go much farther, but as the low patrols cannot follow them, we must base ourselves on these latter in calculating the forward limit of air observation.

Nevertheless, we have possibilities which may result in an extreme reach of 8,800 to 11,000 yards.

With the mentioned means of attack and anti-aircraft defense, the (air--Tr.) front will be easier to maintain in proportion as it shall be farther in rear of the ground front. If, then, we have carefully determined the rear limit acceptable for the air observation, we can, by approaching that limit, partly compensate for our inferiority in air means as compared with those of the enemy.

When two air services are face to face, the situation of the air front is established -- consideration being given atmospheric conditions -- as a function of the respective strengths of these two air services. The weaker party is thrown back more or less distance into the interior of his lines.

We now see how the Command can arrange and follow his air situation.

Knowing the rear limit acceptable for his observation and, on the other hand, informed on the real situation of his air front, he can judge if it is necessary for him to request reinforcement in pursuit and in antiaircraft. Finally, if he cannot obtain them and if his means permit only an intermittent protection, he will choose the periods during which he can get along without pursuit aviation to make the necessary savings.

12-12-24
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We could also consider making savings by limiting, not the duration of the protection, but the front to be protected. However, this is seldom possible except at the Army echelon, for an attack patrol is sufficient to take care of a front of 11,000 yards. When we wish to deny a narrow front to the enemy air service, all we can do is to turn it over to the anti-aircraft defense.

When the ground front moves, the anti-aircraft batteries that are cooperating in protecting air observation must be pushed forward as are ordinary batteries.

All that we have just said applies to the defensive as well as to the offensive. The principal difference between the two situations is that the defender who will have, above all, to struggle against the enemy infantry, can accept an air front farther to the rear than can the assailant.

ATTACK OF ENEMY AIR OBSERVATION.--MASTERY OF THE AIR.

The air service may be given the mission of attacking the enemy observation.

We may thus, momentarily, obtain mastery of the air. Momentarily, because the attacking air service is obliged to go back to its landing field at the end of a maximum of two hours' flight, and nothing can force the enemy to accept the air battle offered him. The operation, therefore, risks not "paying." If we were to put on such an operation at the expense of the protection of our own air observation, it would be advisable to play so large a stake very carefully and knowingly.

Under this reservation, the moments at which it seems most worth while to attempt to paralyze enemy air observation appear to be:

-- for the defender, the moment when the assailant is engaged in the attack of a reverse slope -- an attack in which he cannot get along without air observation;

-- for the assailant, the moment the attack starts. What objective is to be given the air attack? We have noted the desirability of preventing the enemy from using the fires of the batteries of adjacent zones in aiding in the defense of the zone attacked. Therefore it would seem advisable to launch the air attack on the zones adjacent to the zone of principal effort as well as upon that zone itself.

ATTACK OF GROUND OBJECTIVES

First of all, let us recall that the attack of ground objectives is incompatible with the properties of the single-seater pursuit airplane. "In fact, the single-seater aviator aims his machine guns by use of his rudders. So, in order to machine gun a column on the road, for example, he must place himself vertically above it and dive at in order to fire. The descent, consequently will be at a terrific speed. The airplane moves toward those who are firing at it and runs a big risk, to say the least, of falling in enemy territory in a damaged condition (the airplane straightens out its dive at a distance of often less than 110 yards from the ground." (Commandant Menard, l'Aviation de Chasse.)

The airplanes to be used for these attacks are, at the present time, day bombing airplanes, and, eventually, two-seaters or airplanes carrying three or more.

When we have limited means at our disposal, the most remunerative battle field targets are enemy reserves in movement.

The use of bombing units must often be ordered in advance. In this case, the best thing to do is to attempt to calculate-- according to our information of the enemy and our anticipations concerning development of the attack -- the hour and the zone in which we are likely to find the enemy reserves. In 1918, very fine results were obtained by following out this procedure.

AIR SERVICE IN THE VARIOUS PHASES OF COMBAT

In the preceding we have had in view chiefly the attack of the position of resistance.

In the engagement, the most important problem for the Command is the verification of the attitude of the enemy and the discovery of his batteries. This requires active and well-protected air observation.

In the last phase of combat, when success accentuates and pursuit commences, the most important thing is to endeavor to increase as much as possible the disorganization of the enemy. Machine gunning moving columns and bombarding bottlenecks the enemy must pass through are the most appropriate operations to effect what we desire.

12-12-24
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CHAPTER VIII.

OFFENSIVE AGAINST AN ENEMY IN MOVEMENT

In the attack as we have studied it up to the present, we have assumed that we were concerned with an enemy who was holding himself strictly on the defensive. The assailant found resistances, made pauses, but the enemy was behaving like an obliging dummy. It is evident that our conclusions cease being valid when we are confronted by an enemy that attacks and that, in this latter case, the physiognomy of contact will become quite different.

In order to bring this out, let us commence by examining an actual case, the first battle of Guise (August 29th, 1914).

I. THE FIRST BATTLE OF GUISE (Sketches Nos 46 to 51).

GENERAL SITUATION (Sketch No 46)

On August 28th, the Fifth French Army is assembled in the region south of Guise. At its left, the British Army is south of Saint-Quentin, followed by von Kluck's Army. Von Bulow's army follows von Kluck's army, echeloned to the left.

On August 27th, General Joffre had given General Lanrezac the order to attack von Kluck's army in flank. General direction: Saint Quentin.

In execution of this order, General Lanrezac gave orders to:

-- the group of reserve Divisions: to march on Urvillers;

-- the 18th Corps: to move on Homblieres and Marcy;

-- the 3d Corps: to attack in the direction of Fonsommes;

-- the 10th Corps: to move to the region of Guise to cover the right flank of the Army.

-- the 1st Corps: to have one division insert itself between the 3d and the 10th Corps, to have one division go into Army reserve at Housset.

Here, we shall limit ourselves to showing the operations on the left bank of the Oise.

On this region, the German forces engaged on August 29th comprise the X Corps and the Guard.

The X Corps was to debouch at Guise and advance in two columns: from Guise on Courjurnelles and from Flavisny on Landifay.

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12-11-24

The Guard also formed two columns, one moving on Sains-Richaumont by way of Colonfay, the other leaving Etréaupont and marching, it seems, on Vallée au Bleds.

The details of the actions of these two corps are not yet thoroughly known. Therefore we shall limit ourselves to the French side of the battle.

On the evening of the 28th, the French Fifth Army is in the situation shown by Sketch No. 46.

The orders of the Corps for the 29th were sent out very late in the evening and, generally speaking, reached the Divisions concerned only near midnight.

In the 10th Corps, the 20th Division is to move on Andigny, holding Guise and Flavigny.

The 19th Division is to leave one brigade in Corps reserve at Sains--Richaumont; the rest of the Division will go to the east of Colonfay and toward le Sourd, with the mission of interdicting to the enemy the passage of the Oise between Monceau and Proisy.

In the 3d Corps, a pause will be made before the passage of the Oise:

The 5th Division is to go to the region of Jonqueuse, with advance guards on the heights to the east of the Oise;

The 6th Division, to Courjumelles;

The 37th Division, to the southeast of Courjumelles;

As to the 1st Corps, it is to take, in a single column, the Tavaux--Marles--Guise road to reach the positions assigned it.

THE DAY OF AUGUST 29th, 9:00 AM (Sketch No. 47).

Beginning in the morning all the advanced units run into the heads of the columns of the X Corps and the Guard, which are crossing the Oise from their side, marching toward the south.

The first contacts are gained between 8:00 and 9:00 AM. They are not lucky for us.

In the 10th Corps, the 40th Brigade arrives at Andigny in a heavy fog, at the same time as the Germans. A confused fight takes place around the village, the result being that the 40th Brigade commences to fall back.

The 39th Brigade has moved on Colonfay. Toward 9:00 AM it is seriously engaged.

The 37th Brigade has found the enemy at le Sourd and it attacks them.

/lkb
12-11-24

In the 3d Corps, the leading regiment of the 5th Division is greeted by shells from the German artillery abreast of the Bertaignemont farm. It suffers heavy loss and retrogrades toward Landifay. The second regiment of the Division engages in its turn, does it more cautiously and faces Bertaignemont. The two other regiments move up to the field of battle.

The 6th Division is assembled at 9:00 AM in the region of Courjumelles with an advance guard toward Jonqueuse and a covering force of three battalions along the Oise.

The movement of the 3d Corps towards the west, therefore, is partly stopped. Nothing further can be accomplished except by the 6th Division.

The 37th Division reaches the south of Landifay.

The 1st Corps, is in march on the Marles road. Its head is approaching Hérie-la-Viéville.

To sum up, the front of initial contact is marked out by Jonqueuse--Bertaignemont--Audigny--Le Sourd. It holds up pretty well at the left, but it is very unstable at the right, where the left wing of the German X Corps and the right wing of the Guard are attacking vigorously.

SITUATION AT ABOUT NOON (Sketch No.48)

The period between 9:00 AM and noon is marked by a deep gash in the front of the 10th Corps.

The 40th Brigade, accentuating its backward movement has dropped back as far as Housset. The 39th Brigade has also been thrust back from Colonfay and is falling back, part on Sains--Richaumont, part on Housset. In the 37th Brigade, the 71st Regiment has succeeded in getting a foothold in LeSourd; but the 48th Regiment, outflanked at the left, returns to the heights at Sains.

The 38th Brigade, Corps reserve, has been deployed in front of Sains-Richaumont.

In the 3d Corps, the 5th Division is still facing Bertaignemont, having lost, however, a little terrain. With the object of getting more room on this side, the 3d Corps Commander brings forward a brigade of the 37th Division and gives it the objectives of Bertaignemont and the woods to the north. This movement is under way at about noon.

Farther to the west, a part of the 6th Division has already crossed the Oise and is on the heights of Neuvillette.

The 1st Corps, has thrown a brigade into Hérie-la-Viéville. The rest of the Corps is finishing its assembly abreast of Housset.

/lkb
12-11-24

Informed of the situation, General Lanrezac has decided that "in view of the strength of the German group which is debouching at Guise and to the east, resumption of the attack toward Saint Quentin will not be considered; we must think only of beating the group in question and destroying it, or, at least, thrusting it back completely to the north of the Oise. -- The 18th Corps and Valabrègue's Group of (Reserve -- Tr.) Divisions will mask Saint Quentin, while the main body of the Army will drive in a hard attack toward the north."

SITUATION AT ABOUT 3:00 PM (Sketch No 49)

From noon to 3:00 PM the situation remains difficult for the 10th Corps. The 38th Brigade has had to give up points in front of Sains--Richaumont; it still holds part of the village, however. At its right the 37th Brigade has been obliged to fall back abreast of it. The enemy, however, is not pushing as vigorously as at the beginning.

On the front of the 3d Corps, the attack of the 74th Brigade on the Bois de Bertaignemont has given no results After having penetrated into the farm (farmhouse of the Bertaignemont farm -- Tr.), the brigade is thrust out of it and has come back to north of Landifay.

Since noon, the 6th Division has been headed toward Jonqueuse. It has reinforced its fighting line facing this village and orders the 69th Brigade to send a regiment against Macquigny, by way of Bernot, to cooperate in the general attack.

The 1st Corps has finished its preparations for attack. At about 1:00 PM it had one brigade (the 1st) in line to the north of Le Hérie. The 2d Brigade has come up on its left, and thus the 1st Division is reconstituted. One brigade of the 2d Division, the 4th, arrives in echelon to the left behind the 2d (Brigade -- Tr.); the 3d (Brigade -- Tr.) is still at Housset.

The attack objectives are:

-- for the 3d Brigade: Chevennes, Le Sourd;
-- for the 1st Division: Clanlieu, Andigny;
-- for the 4th Brigade: Bertaignemont, La Raperie.

END OF THE COMBAT.

The attack, supported by all the artillery of the Corps, starts at 5:30 PM.

In two hours, nearly all the terrain lost during the day was retaken. The greater part of the 10th Corps also moved to the front and towards evening contact was established on the line: northern edge of the Bois de Bertaignemont--Clanlieu--Puisieux--Colonfay--Le Sourd. During the night, the Guard and the (German -- Tr.) X Corps commenced to repass the Oise and the forward movement of our troops was resumed the next morning without trouble.

/lkb
12-11-24

It was a victory indeed, at least on that part of the battlefield where the Army Commander had sought it.

This brief exposé is sufficient to bring out the fact that the characteristics of this sort of combat are the instability of situations, the rapid succession of movements and, for the command, enormous difficulty in clearly seeing the ensemble of its operation and in making its decisions soon enough to dominate events.

If we try to pick out the phases of this battle, we can note:

-- an irregular and disorderly gaining of contact, very unfavorable at certain points (Andigny, Colonfay), simply unfavorable at others (Bertaignemont, Le Sourd), rather favorable elsewhere.

-- a shifting and confused period, during which the fighting line seeks equilibrium at the expense of the most feeble units (Sketch No 50). The oscillations, sudden at first, diminish little by little. In this case they ceased at about 3:00 PM and the fighting line was relatively stable: the victor tires and the vanquished pulls himself together. But we must have no illusions about it: the situation remains tense and if something does not happen, nothing says that this period of calm will last indefinitely.

-- something finally occurs -- the entrance into line of the 1st Corps, with the results that we have pointed out.

II. - SPECIAL CHARACTERISTICS OF OFFENSIVE COMBAT AGAINST AN ADVERSARY IN MOVEMENT.

Bearing in mind the facts given in this example and those given by the experience of previous meeting combats, let us now try to bring out the modifications that an offensive attitude of the enemy might make in our first conception of combat.

We are dealing with an enemy in movement. His artillery is not installed and we do not have to fear his heavy pieces as we would when confronted by an enemy in position. For this reason we can, for example, increase the strength and diminish the distance of our advance guards.

But if we wish to avoid commencing by a riot, the approach march should always begin at quite some distance, i.e., a minimum of six and one-quarter to seven and one-half miles from the enemy. If the enemy continues to advance the meeting will not take place at seven miles, but it will take place at three and one-half miles. Therefore it is necessary to take our precautions very early if we wish to avoid being taken, flagrante delicto, in the act of deploying, as seems to have occurred at Guise in the cases of certain units of the 10th Corps.

/lkb
12-11-24

GAINING CONTACT

Against an enemy in position, the cavalry and the advance guards gain contact successively at the same point. Against an adversary in movement, on the contrary, the cavalry is stemmed and ebbs back on the advance guards. The advance guards gain contact this side of the line of cavalry contact.

It is very difficult for the cavalry to keep all interested parties constantly informed of the changes in a front that is in continuous movement. Result: with slightly trained troops, the first infantry contacts gained are nearly always gained unexpectedly. When we started, we took as objective a point where there was no enemy, but the enemy arrives there before we do and, when we are half-way there, we suddenly fall under his fire.

To limit risk to a minimum, the only thing to do is to have echelons of fire in position so as to be able to immediately take care of the adversary.

In a way, this obliges us to arrange the gaining of contact against an enemy in movement like an attack during a peace-time maneuver. Also, we may note that the new Regulations require the advance by bounds in a much more categorical manner when against an enemy in movement than when against an enemy in position.

Consequently we shall calculate the possibilities of the enemy, we shall advance by successive bounds and as soon as we shall approach the probable field of battle, we will not hesitate to prepare regular little attacks which will be delivered automatically if the enemy beats us to our objective.

So, the gaining of contact should be "cut and dried" in advance, should be made in the course of a maneuver ordered by the leader, should be susceptible of being supported by artillery at the first call therefore, should be made by troops advancing from objective to objective with all precautions taken -- and should not be left to chance.

ENGAGEMENT.

We have said that the object of the engagement was to verify the value of the contact and push back the enemy's security dispositions.

Preparation for the engagement, in which we call upon the troops of the main body and all the divisional artillery requires a certain time. When it is a case of an enemy in position, the value of the contact does not change during all this time, and the only way of determining it is to attack. But when it is a case of an enemy coming towards us, the value of the contact increases in proportion as time passes if the enemy continues to bring up troops, and on this point our air service should be able to inform us. Therefore we have, except on very unfavorable terrain, means of information that we did not have in the preceding case.

/lkb
12-11-24

The initial attack on the enemy's security dispositions can generally involve only a part of the front. Under these conditions,it is possible, therefore, that the enemy may himself attack on another point. In this case an "unhooking" (décrochement) of the front will occur and our attack risks being taken in flank during its execution.

Finally, there is a third characteristic to note. Against an enemy in position, we are the master of our engagement, in the sense that we can limit the effectives engaged to suit ourselves. We can stop expense when we wish. But if, on his side, the enemy attacks, it is no longer the same: to contain him we may be forced to put in new troops. For this reason, the amount of strength to be put into line may exceed our expectations more or less greatly and have an influence on our possibilities of later attack.

The engagement in the case of an adversary coming toward us may, therefore, have much graver consequences than in the case of an adversary in position. So the Regulations tell us that, in this case, the Corps Commander "follows the action of the advance guards and, from the beginning of the engagement, takes over direction of combat on the entire front of the Corps." Thus, in the case under discussion, what we said concerning progressive centralization of combat is no longer exact. The Corps Commander must take the reins back in his hands much sooner.

PREPARATIONS FOR ATTACK.

The Regulations state "The battle will later develop into the attack; this will be carried on in the same manner as an attack against an enemy in position. The Corps Commander should make preparations for this attack as soon as possible so as to get the start of the enemy in initiative."

This again is a new precept.

In the case of an enemy in position, the Regulations said "As a principle, he will proceed to executing the attack only when he shall know that he has sufficient means." But in front of an enemy in movement, preparation must be pushed, for the enemy himself is also preparing and -- other things being equal -- there are chances that the advantage will be with the first one ready.

ATTACK

If the period of preparation is sufficiently long, the rest of the battle will fall into one of the two simple cases we have just studied. If we have the initiative, it will be an offensive with progressive exploitation. If, on the contrary, the enemy has the initiative, it will be a defensive battle terminated by a counteroffensive of the entire force when we shall be ready.

/lkb
12-11-24

However, in the case in which we take the initiative in the attack, we must count on particularly strong reactions of the enemy. If we wish to be ready to reply to them we must watch our game carefully, i.e., proceed by vigorous, rapid blows with a resumption of the guard and constitution of reserves during the interludes.

Finally, though the case does not occur frequently, it is advisable to consider the case in which, either as a result of the mission given, or as a result of the enemy's actions, we should be obliged to seek a rapid decision in which the combat would immediately or nearly immediately follow the engagement. It is chiefly in very critical periods that these situations occur.

In this case, the problem is a problem of "maneuver". We shall meet with it again in Part Three.

THE AIR SERVICE IN THE ENGAGEMENT AGAINST AN ENEMY IN MOVEMENT.

We have already pointed out the necessity of watching the attitude of the enemy. In the present case, the object of this is to enable the command to have early information on the zone in which the first contacts will occur.

This point settled, the principal services to be asked of the air service are:

-- to reduce the roughness of the gaining of contact for the friendly infantry;

-- to give information on the state of advancement of the enemy deployment.

This will require the constituting of a sufficiently strong air front abreast of and, if possible, in front of the first elements of friendly infantry. The critical moment is the one at which the two infantries are about to come to grips.

As regards attack of ground objectives, occasions for this are very fleeting and these objectives can seldom be picked out in advance. We must, therefore, send out in advance units charged with ground attack. The most favorable period appears to be the one immediately after the two infantries gain contact. At this moment there nearly always occur hesitations and precipitant movements which cause the usual precautions to be neglected and give the assailant favorable opportunities.

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12-11-24

ENGAGEMENT BY SURPRISE.

It is agreed that, theoretically, there should be no surprise. This was already so, moreover, in 1914 and the Regulations of that period were so impregnated with the security idea as to make us believe that surprise was to be considered as unlikely. Unfortunately, experience shows that it is easier to remove surprise from our anticipations than it is to eliminate it from reality. To prepare ourselves for an engagement by surprise is not, however, turning up our nose at security measures. It is simply reflecting in advance on what we should do in case - despite the precautions taken -- we should find ourselves engaged under unexpected conditions.

There is surprise every time that we meet the enemy sooner than we expected. In this case, things risk going badly the more rapidly as the leader is not there to direct events.

On the morning of August 22d, 1914, when the 4th Corps debouches from the Basse Vire, what does the Corps Commander know of the real situation? (Sketch No. 57).

The Corps had indeed had some contacts during the day of the 21st, but the enemy had not held according to the Information Bulletin of the Army dated 3:00 PM, August 21st:

> "On August 20th, German columns crossed the northern part of the Grand Duchy of Luxembourg, north of the Rure, moving towards the region of Neufchateau.
>
> "The southern zone, particularly to the southeast of Luxembourg, is occupied, but only unimportant movements of troops have been seen there.
>
> "Only a few cantonments or bivouacs of infantry and artillery have been seen between Etalle and Arlon ....."

The 4th Corps, on August 22d, will have the mission of covering the right of the Fourth Army which is advancing toward the north. Consequently, "this Corps will push one division to the region of Etalle, and another division to the region of Saint-Léger Chatillon, so as to be able to counterattack by Etalle and by Vaux, all the enemy forces that may debouch from Arlon."

How, under such conditions, could one expect an immediate engagement?

/lkb
12-11-24

Yet, the morning of the 22d, when the fog rises, the right division of the 4th Corps -- the 7th -- has five battalions and one group of artillery in a hot fight in the bowl-like depression at Ethe. The rest of the artillery is in battery on the crest northwest of Gommery. The rest of the infantry is in the valley of the Basse Vire, separated from the fighting line by a crest on which the enemy fire interdicts all movement. At the left, the 8th Division has half of its infantry engaged abreast of the Bellevue farm, the enemy having attacked on outposts at the moment our advance guard was passing through them. The Corps artillery, whose head had reached la Tour, moves to the rear to go into battery to the south of Saint-Mard. A few quarters of an hour have been sufficient to join battle under conditions such that it almost cannot be directed.

Was the Information Bulletin of the Army inexact, then? No, but its information was 24 hours old. Now, (Sketch No 84), while the French armies moved up toward the north, the German armies were advancing toward the west and the distance separating the two adversaries diminished at the rate of from 25 to 30 miles per day. Under such conditions it is very difficult to anticipate where the meeting will take place.

In fact, all gaining of contact with an enemy in movement includes more or less of the unforeseen, whether it is a case of a large or small unit, an attack, "sedimentation", or a counterattack.

There is no reason for us to think that the future holds much more favorable conditions for us than the past. The increase in means for investigating and searching is in fact compensated for by increase in means for rapid transport. With trucks, two groups of troops separated by a distance of 93 miles may run into each other the next day, and the situations of the future take on an instability which we have not yet become acquainted with.

The line of action to be taken in such circumstances is, above all, an affair of character and personal temperament. It is the business of each one of us to develop an individual method. However, since we have given the problem, we cannot get away from sketching the broad lines of a solution.

It seems to us that the first thing to do is to note the degree of availability of our means. Our disposition is one probably echeloned in depth, in route column or approach formation. We shall split it up into two parts: that which is engaged, or going to be, and that which is (still--Tr.) at our disposal. We will determine the region in which the assembly of the forces can be most quickly accomplished. We will try not to take our desires for realities, for illusions are easy in critical moments.

That being done, we can choose our battlefield, and, afterward, the general attitude to observe while we are gathering our forces. It is probable that the mission given us is offensive; but it does not always oblige us to engage fraction by fraction as our units arrive in the combat zone.

The battlefield decided on, we will deduce from it the mission to be given to the troops engaged -- a mission that should be simple, similar to the mission we give outposts. It is necessary to warn them most promptly when they are to abandon the offensive attitude, for every minute lost risks making the situation worse.

Finally, our main thought is that of again taking the initiative in the combat and in order to do that we will make a plan of maneuver. In executing this plan we will base ourselves chiefly on available troops and on the reserves -- which, naturally, supposes we still have some of them.

Verification of what we have available, choice of the battlefield, role of the troops engaged, plan of maneuver -- such seem to us to be the first questions to solve.

On the whole, we can always hope to reestablish a situation if we have reserves and if the troops in first line know what they have to do in case of an unexpected meeting with the enemy. Those are two precautions which may always be taken in advance, and which it is always well to take, even though intervention by the enemy may appear unlikely -- even, also, if we are not in first line, for, several times, we have seen second line or reserve units surprised when they had every right to believe themselves in security.

III ENGAGEMENT OF TROOPS BROUGHT UP TO THE BATTLEFIELD IN TRUCKS.

Let us turn back to the Battle of Matz (Sketch No 41).

The battle of June 11th was delivered by 16 divisions of which 4 only were in line on June 9th. It is, therefore, a veritable new army of twelve divisions that has been brought to the battlefield.

The average distances covered were:

--for the divisions used for "sedimentation":

11th -- 6 miles
18th - 6 "
69th - 12½ "
126th - 4 "
121st - 30 miles
123d - 22 "
67th - 6 "

--and for the counterattack divisions:

129th - 12½ miles
152d - 10 "
165th - 18 "
48th - 35 miles
133d -- 48 "

The counterattack divisions came from areas whose extreme points were more than 62 miles distant; it was possible to assemble them in less than 24 hours on a front of less than 6 miles: orders left G.H.Q. at noon on the 10th, counterattack launched at 11:00 AM on the 11th.

Here we probably have a view of what certain battles of the future in a war of movement may be: divisions brought to the field of battle from all the points of the horizon and rapid assembly of a mass in the zone in which we wish to make the principal effort.

/imdr
12-11-24

Here it was possible to make the concentration under the protection of a continuous front, but that is not an indispensable condition.

Nothing goes to show that we shall not be induced to attempt it behind lesser protection or even behind a simple curtain.

Of course, such maneuvers would be easier with homogeneous divisions capable of moving thirty to forty miles without having to call on extra-organic means. But the use of reserves of automobile transport and of porte artillery already give us an acceptable solution, and it is necessary to consider the tactical side of the problem.

The two points that appear to us to have been brought out into high relief by the experiences of 1918 are: the necessity of covering detruckings and the preservation of tactical control.

COVERING OF DETRUCKINGS.

To simplify matters, let us assume that we have to extend the extremity of a line of troops that are engaged and that in the region to which we wish to bring new units, we are able to constitute a light covering force of cavalry when we so desire.

Transporting one Division in trucks requires:

Infantry and odd elements: 600 trucks

One regiment of artillery, porte: 250 trucks

Organic artillery of the division: 120 trucks

A total of 1,000 trucks, the column-time of which is 5 hours.

If two Divisions and the non-divisional elements of a Corps are to arrive by the same road, we shall have a column of about 2,600 trucks the column time of which is not less than 13 hours.

For detrucking, we must have 5 to 6 detrucking points per Division, and they may be anywhere in an area of 4 to 6 miles in depth.

We must be able to detruck without being shelled by the enemy, consequently we must be in rear of a ground covering force placed 2 to 2½ miles in front of the detrucking area. A covering air force will also be necessary if the operation is to be carried out during daylight.

What should be the composition of the covering echelon?

If we assume that the front contemplated for each division be 4,400 to 5,500 yards, its occupation will require at least two battalions of infantry. Two batteries of porte artillery and a fraction of antiaircraft defense would also be useful.

We must also prepare execution of the detrucking in such a way that it will not interfere with the flow of transport.

/imdr
12-11-24

This requires a detrucking "regulating station" placed at the point at which the column breaks up, where the different elements can pick up the necessary guides (infantry and artillery) to lead them to their detrucking points.

It is near this "regulating station" -- say about 7 miles from the front -- that the initial Command Post of the Division will be placed. As it must be able to change the detrucking points, this Command Post should be connected with the Command Post of the covering force -- hence the necessity of a signal detachment in the covering echelon.

Finally, we must consider the displacement of the air service and commence the preparation of auxiliary fields at a reasonable distance from the new front.

So, this first echelon will be of quite considerable size. Although we have assumed the presence of friendly cavalry in the area to which this echelon is going, it must cover itself by light elements: cyclists, motorcyclists, machine guns in touring cars, etc., which will explore a little in advance the area to be traversed by the first echelon.

Finally, we conclude that the covering force of a Division should be constituted as follows:

-- light exploring elements;

-- 2 infantry battalions;

-- 1 or 2 batteries of porte artillery, if needed, and the reconnoitering parties;

-- detachment of antiaircraft defense;

-- signal detachment;

-- "regulating station" detachment and part of the Division staff;

-- air service detachment (to prepare field).

It is of course necessary to give this detachment a start so as to enable it to accomplish its numerous missions. It should precede the principal column by 2 to 4 hours.

As to the principal column itself, its order of march should be arranged as in the past, that is to say, as a function of the urgency of arrival of its elements on the battlefield, for example:

1 battalion of infantry,)
) column time: 1 hr 30 min.
1 regiment of porte artillery,)

2 regiments of infantry, column time: 1 hr 30 min.

Services of the Division.

PRESERVATION OF TACTICAL CONTROL.

In 1918 we were able to note that whenever it became necessary to mix Divisions, it was very difficult to direct combat, and the output of the Divisions in line consequently diminished. The ideal is, therefore, to organize the move in such a way that each division will find itself opposite its particular place when arriving on the battlefield.

This offers no difficulty when we have one route per division at our disposal and when we have enough trucks to carry all the units at once.

But these favorable conditions may not exist.

1st Case. -- When two divisions of the same Corps must use the same road and engage side by side. If the engagement must commence before completing the detrucking, we can avoid a complete mix-up of the units only by "mixing" the columns, i.e., by alternating in the column elements belonging to the two divisions concerned.

2d Case. -- When we cannot take both the divisions at once and we are obliged to make, for example, two trips. We then have a choice between two solutions for the first movement: transport one complete division of the two, or else transport half of each division.

The first solution is acceptable when the front can be occupied by a successive extension and when the units brought up on the second trip will be used to extend one end of the line. But if the front is to be filled in simultaneously throughout its whole extent, the second solution is preferable, because it insures better exercise of command along the front and does away with the necessity of trucks moving parallel to and in rear of the front. It is, therefore, both more sure and more rapid -- the more so as we can combine with it a march in advance of the fractions left in rear.

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12-11-24

CHAPTER IX

ATTACK OF A FORTIFIED FRONT

The teachings of the war relative to the attack of a fortified front have been codified by the Instruction of October 31st, 1917, on the offensive actions of Large Units. It is to this Instruction that we have to turn to note the care, even the minuteness, with which the great offensives against fortified fronts in 1916 and 1917 were prepared. Here, we cannot go over all the questions treated in that Instruction; we shall simply follow some broad lines in endeavoring, chiefly, to bring out the difference between the procedure necessary in the attack of a fortified and a non-fortified front.

I. THE ELEMENTS OF THE PLAN OF ATTACK.

CHARACTERISTICS OF A FORTIFIED FRONT

By going back to Sketches Nos. 1, 2, 3 and 56, we can note the prodigious development of fortification on the battlefield during the war. As time goes on organization of the ground increases and becomes stronger and stronger. In 1917, it was not rare to be able to count 15 to 20 of these -- and an equal number of belts of wire -- along a single axis of penetration. A good many of these organizations are on reverse slopes and invisible from our ground observation posts.

At the same time the obstacle and the sheltered circulation system (trenches and communication trenches) was developing, the shelters were being armored, and, through the concrete work and the depth to which they were dug, became stronger and stronger.

Time, photography and daily observation enabled the organization of a very studied system of fires, and numerous buried telephonic communications assured regular functioning of these fires in the greater number of possible eventualities.

Whatever form fortification may take on in the future, it seems that, for a long time still, its main ideas will be the same: increase artificial obstacles, enable troops to move on the field of battle without being seen, provide shell-proof shelters for personnel and weapons, constitute a system of transmissions that will withstand bombardment. Consequently we may still count on resistances of the same sort that we had to overcome in 1917, when we have to attack a front that the enemy has had plenty of time to fortify. There will, however, be more uncertainty concerning the real position of the defender than during the first years of the war, because the trench is no longer the essential emplacement of fire, as it was at that period.

THE MEANS OF ACTION

To succeed in breaking such fronts, we naturally shall have to have much more powerful means than for an ordinary attack. Let us rapidly run over the conclusions on this subject that we arrived at during the war.

The means at present at our disposal are rupture tanks, artillery, infantry, air service.

RUPTURE TANKS

The tanks used are heavy, or rupture, tanks. We can launch them against an organized position (in contrast with light tanks which can be used only in open ground).

A battery of heavy tanks corresponds to a section of light tanks; like the latter, it acts on a front of 220 yards (55 yards per tank). We are not obliged to place the batteries of tanks closely together: we habitually couple a battalion of infantry and a battery of tanks. But we may give two batteries to the one battalion at points where we wish to be most strong. (The "battery" and "section" both have 5 tanks -Tr).

When we have two successive positions to attack, we may assume that part of the tanks used against the first position will be available to act against the second position.

The heavy tanks have no difficulty in crushing the belts of wire wherever they pass; their use, however, does not enable us to completely do away with the artillery preparation: incidents are always possible and our attack must not run the risk of being stopped as the result of an incident. It will be advisable to make some breaches in the belts of wire in the zone of action of the heavy tanks.

The heavy tank, like the light one, can do nothing against the enemy's guns. Therefore, we must blind the points from which the enemy can use direct fire against our tanks. In certain terrain this requirement may prove a very heavy draft on our resources.

ARTILLERY

The artillery is charged with insuring:

-- preliminary destruction of the obstacles that may stop the advance of our infantry;

-- support of the infantry and of the tanks during the movement in advance;

-- counterbattery.

Destructions. Even with very long preparations, we cannot succeed in destroying everything. A choice must be made of what is to be destroyed and this choice falls on the command "The Command determines with exactness the objects to be fired on. Trenches and belts of wire are not destroyed in entirety, but we must make the necessary gaps and crush the important points. In the same way, we do not fire on the whole of a woods or village, but on clearly determined parts of them; those which we wish to enter, or which flank objectives we have to reach." (Offensive Actions of Large Units, p. 30).

Destruction fires will be directed principally at:

-- belts of wire (one breach per about 220 yards in the zone of action of tanks; one breach per 110 yards, at a minimum, in the other zones);

-- groups of shelters. Those which escape destruction nearly always give birth to islands of resistance in the course of an attack;

-- the lateral edges of villages, woods and other natural supporting points which nearly always harbor flanking weapons;

-- important crossroads of trenches and communication trenches through which pass, almost of necessity, the support troops.

It is a good idea to note, separately, the needs (number of breaches and destructions necessary), and the possibilities (number of breaches and destructions that the artillery at one disposition can make in the time allotted for the preparation). We can then fix the order of urgency of the destructions. We must anticipate the difficulties of execution never enabling us to completely carry out the theoretical program; that is why an order of urgency is always necessary.

The supporting of infantry and tanks and counterbattery are sensibly the same as in an ordinary attack, with the difference, however, that the fires should be more abundant and more dense.

The allotments of artillery to be figured on are naturally larger. The Instruction on the offensive actions of Large Units anticipates the following figures:

Number of batteries to 1,100 yards:

	75mm	heavy short	heavy long	Total	Trench mortars
Heavy allotment	18	10	8	36	3½
Medium allotment	14	7	6	27	2½
Reduced allotment	10	5	5	20	2

The heavy density corresponds, on an average, to the allotments of the offensives of the second half of 1917. The offensives of April 1917 were made with fewer means (See the offensive of the 6th Corps, following).

INFANTRY

According to the Instruction of October 31st, 1917:

"The basis for calculations is the battalion: the battalion is the unit of combat. Experience proves that in an assault on organized positions its useful fighting front is between 330 and 440 yards. Its depth of penetration, which is chiefly a function of the organizations that have to be mopped up, oscillates between 880 and 1320 yards ....."

However:

"Possibilities in front and depth may be increased in the case where attempted surprise is the principal element of the preparation."

The theoretical disposition for the attack is the division in square. "The Division in square is a disposition with three Regiments abreast, with three battalions in line, and three lines of battalions in depth: the offensive possibility is thus about 1,320 yards in width (front--Tr.) and 2,200 to 3,300 yards in depth (penetration --Tr.) with passage of lines." (Instruction, art. 33.)

But all the battalions will not meet the same difficulties. So, before deciding on the final distribution, it is advisable to attempt to figure the output of each battalion as a function of the difficulties it is possible for us to anticipate.

The characteristics of this output are the speed and the depth of the advance.

The speed of the advance is influenced by:

-- the islands of resistance we may have to maneuver against;

-- the natural obstacles of the terrain which are of a nature to break up and delay the advance of the first line.

The depth of the advance is influenced by:

-- the losses, which will be, -- other things being equal -- the heavier in proportion as the terrain over which the infantry is advancing is more exposed to distant observation by the enemy;

-- the size of the detachments which we must leave behind to mop up the enemy organizations.

As a matter of information, we may note that at the battle of la Malmaison, the attack developed (sketch No. 54) on a depth of 3,850 to 5,500 yards. The total distance necessitated only a single passage of lines (of battalions) and this passage was made on the first objective. The first line battalions, therefore, made distances varying from 1,100 to 2,200 yards -- for those acting this side of the first objective -- and from 1,650 to 2,750 yards -- for those acting beyond the first objective.

As regards density of the attack, it was, in the zone comprised between the Pinon ravine and the front (fort? --Tr.) of la Malmaison, on the departure from the French trenches -- 8 battalions for 3,300 yards; on the departure from the first objective, it was 8 battalions for 4,400 yards.

FRONTS OF ACTION OF LARGE UNITS

The Instruction of 1917 considered three possible hypotheses.

The first -- considered as exceptional -- corresponded to an allotment of 30 divisions for a 22,000 yard front of attack. It was assumed that they would be distributed on three lines, viz:

-- 1st line -- 13 divisions:

10 of them having a front of 220 to 1430 yards;

3 of them having a front of 2,200 to 2420 yards.

-- 2d line -- 10 divisions in rear of the principal attack front.

-- Reserve: 6 to 7 divisions.

The second -- considered as normal -- comprised 20 divisions for a 22,000 yard attack front,(1) say:

-- 1st line: 10 divisions:

6 on 2,200 yards of front;
3 on 2,750 yards of front.

-- 2d line: 3 divisions in rear of the principal attack front.

Reserve: 8 divisions.

Finally, a third allotment -- considered a minimum -- comprised, for a front of 22,000 yards:

-- 7 divisions in 1st line (3,300 yards front each).

Reserve: 3 divisions.

To sum up, the average front of action of a division varies between 1,650 and 2,200 yards.

It is to be noted that in all these projects, a considerable number of reserve divisions are held out. This is for the reason that in the attack of a fortified front we must anticipate that there will be need to relieve a certain number of divisions after the lapse of only a little time. "The offensive possibilities of a large unit have a limit which we must know how to determine according to circumstances: a division employed in first line in an attack cannot advance indefinitely, even if its losses are not heavy.

This fact, derived from experience, must be borne in mind by the Command in connection with the use of the 2d line or reserve divisions ...." (Instruction, art. 34.)

AIR SERVICE

"The organic resources of the Large Units in heavier and lighter than air aviation are sufficient, in principle, for the needs of the air Sectors of the Corps."

By going back to the fronts of action shown above, we see that each 1st line Division could count on 2 squadrons (escadrilles) and 2 balloons. This allotment enables it to satisfy all its needs. However, if the enemy air service is active, it may be necessary to "space out" air observation as regards time and reduce it to the period during which it can be effectively protected.

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(1) For its offensive action of March 21st, 1918, the German XVIII Army (von Hutier's) had 23 Divisions for a 22,000 yard front.

On the day of attack, we must bear in mind that, as the air service must function throughout the day, we can, with two squadrons (escadrilles) have only four or five airplanes in the air at one time -- which is a very narrow margin, since, at the minimum, we must have:

1 infantry airplane
1 artillery airplane
1 airplane at the disposition of the battalion charged with counterbattery of the anti-tank pieces.

THE TERRAIN AND FORTIFICATION

From a plan - directeur we can get very little idea of the terrain; it is preferable to use the ordinary map -- the 1/50,000, for example (1) -- and to first treat the question as if it were an attack over unfortified ground. In this study we will pick out the visible and invisible parts of the terrain, the zones containing observation posts, the zones suspected of concealing flanking actions, the support points and the natural obstacles of the terrain.

Thus we shall obtain the framework on which the enemy has built his defensive organization and it will be more easy to comprehend this organization. Certain details that, in appearance, are insignificant -- the flankings, for example -- will in this way often take on an importance we did not suspect.

The most frequent causes of checks in attacks over fortified terrain are insufficiency of destruction of belts of wire, lines of resistance on reverse slopes, hidden flanking actions and islands of resistance that form around intact shelters. It is in this that we must seek, above all, to read and make a synthesis of the enemy organizations.

"The plan of conquest of the terrain" having been made as usual, we shall make it more specific afterward by using what is given us by the plan directeur, and we shall complete it by putting in the intermediate objectives rendered necessary by the presence of organizations or obstacles susceptible of disassociating the attack.

THE ENEMY.

Observation and air-photography will give a great deal of information concerning the enemy. But the most perfect system of defense is worth only the manner in which it is occupied.

We shall, therefore, endeavor to secure information -- by reconnaissances and raids -- concerning the effectives that the enemy has in line and concerning the front held by his large units.

On the other hand, it is possible that the enemy has not the intention of accepting battle on his first position. Perhaps the prisoners will say, but it is not certain. Now, we can readily conceive that the plan of attack should be very different according to whether the position of resistance is in contact (with us -- Tr.) or farther to the rear.

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(1) Supplemented by all the information we have been able to get from observation.

It is chiefly by observing the changes made in the works of the adversary and by comparing photographs made at different dates that we shall be able to note the general sense in which the enemy is working, and be able to pick out the positions he abandons, as well as those he endeavors to strengthen.

PREPARATION FOR ATTACK

The preparation^{s} for attack comprise:

The works (communications, installation of the artillery, command posts, observation posts, transmissions, putting in place of the Services, etc);

The reconnaissances (for information, in connection with the engagement, checking up on destructions);

The destructions;

Getting the infantry under way.

We shall find all these questions treated in detail in the Instruction mentioned.

We shall simply note the advisability of camouflaging the preparatory works and of commencing them as late as possible. The slightest indication of attack immediately wakens the adversary to feverish activity and in a few days we shall see appear (new--Tr.) works that will sometimes oblige us to double or triple our estimates for destruction.

As to the duration of the artillery preparation-- this is a function of two contradictory considerations: the amount of destructions to effect, the desirability of acting by surprise. It is a delicate decision to make; but it falls upon the High Command to make it. In the preceding we have shown the evolution of ideas on this subject during the war.

CHOICE OF A ZONE OF PRINCIPAL EFFORT

The choosing of a zone of principal effort is forced on us if we have not the means to attack hard all along the front.

It is necessary to make a choice also when we have superabundant means. In this case, instead of applying our savings uniformly along the front, it is preferable to apply them to the most important action; and by this is not meant the most difficult action, but the action whose success will have the greatest repercussion on the operation as a whole.

It is easy for the command to vary the intensity of its actions:

-- by using tanks against appropriate points;

-- by intensifying the accompanying and neutralizing fires on the selected zone; looking very carefully after the destructions and making them heavier;

-- by assigning first urgency to those air service missions that have to do with the units attacking in the selected zone;

-- by narrowing down to their maximum density (330 to 440 yards per battalion) the attack fronts of the units used on these points and by giving these units greater support.

It is to be understood, of course, that there is a question of (proper--Tr.) measure in all this; the output does not increase indefinitely as a function of the means we gather together; moreover, all parts of the front are mutually dependent on one another and a success at one part if no good if we fail everywhere else.

CONDUCT OF COMBAT IN THE DIVISION

"The experiences of the war have led the High Command to constitute, of the different arms, an elementary group capable of conducting an attack with its own means over a terrain where the action of the chiefs of all echelons can make itself felt at the proper time.

This is the Division; the division is the attack unit."

But, conducting combat assumes, it would seem, intervention of the chief in this combat. Now, in the combat we are considering, can the Division Commander intervene effectively and if he cannot, how is he to conduct the combat?

We intervene in combat by putting in what we have at our disposal -- availabilities of sufficient importance to change the equilibrium of combat.

As regards the infantry and the tanks, effective intervention by the Division Commander during combat will be possible only ifthe engaging of the forces be made in two phases, the second phase not following a plan decided on in advance, but depending on a plan to be made during the combat. Here we cannot consider this. Our time is much too short.

The Division Commander, therefore, must build up his maneuver in advance from start to finish, regulating, in advance, the use of what infantry and tanks he has at hand. He can intervene only by use of the artillery at his disposal.

This is on the supposition that he has been able, in advance, to form a sufficiently exact idea of what the development of combat will be: speed of advance, probable incidents and the time necessary to take care of them.

The base of the calculation is the rate of advance of the infantry. This speed may be quite rapid at the start. But, after the passage of the first enemy lines it should be, on the contrary, very slow, in order to facilitate an orderly movement of the infantry over churned-up ground as well as the regular and methodical displacement of the accompanying fire of the artillery........

In determining the speed, consideration must be given the condition and shape of the terrain, as well as the obstacles to be passed through..

As a matter of information, the speed may vary from 110 yards in 1 or 2 minutes (at the start) to 110 yards in 3 or 4 minutes (later). (Instruction, No. 189.)

As to the probable incidents and the time necessary to take care of them, we can get a certain amount of experience only by studying in detail the offensive actions against fortified fronts executed during the war. Here, we cannot enter into such developments; we shall limit ourselves to giving a resume of two such actions: the battle of la Malmaison and the action of the 6th Corps in the battle of April of 1917.

12-12-24
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II. THE BATTLE OF la MALMAISON (Sketches Nos 52 to 54)

THE MEANS

The attack of October 23d had as object the capture and occupation, as far as the foot of its northern slopes, of the plateau: Fort de la Malmaison--Ange Gardien.

It was executed by 3 Corps (11th, 21st, 14th) of 4 divisions. Each Corps had two divisions in first line and two in second line.

The front of attack, from the village of Allemand to the ferme de la Royere, had an extent of 13,200 yards.

The units adjacent to the front of attack were to cooperate in the operation by effecting diversions.

The VI Army had at its disposal for its attack, 1,850 pieces of all calibers, say an average density per 1,100 yards of:

-- 16 batteries of 75 mm;

-- 12 to 13 batteries of heavy short artillery (155 how-Tr.);

-- 8 batteries of heavy long artillery;

-- 3 batteries of A.L.G.P.;

-- 2 batteries of trench artillery; figures corresponding sensibly to the heavy allotment considered in the preceding (p.____)

The artillery preparation (methodical destruction of enemy batteries and defensive organizations) was to last 4 days. It commenced on October 17th-- a fine day -- but the succeeding days were foggy, which obliged the preparation to be lengthened to a total of 6 days.

As regards the distribution and use of the artillery (1) within the Corps, we have the following information from the Artillery Plan of the 21st Corps.

Composition of the artillery;

of each Division:

3 batteries of 58 T
1 battery of 240 T
9 battalions of 75
6 battalions of 155 C
1 or 2 battalions of 220
1 battalion of 270

of the Corps:

2 battalions of 75
2 batteries of 95
1 battalion of 105
9 batteries of 120 L
8 batteries of 155 L
3 batteries of 155 CS
1 battery of 220 TR
2 batteries of 270 C
2 batteries of 280

The artillery of the Corps forms only a single groupment.

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(1) We have given (p.___) the principle points concerning use of the infantry.

The artillery of the Corps forms only a single groupment.

Infantry support.

Each battalion is supported by one groupment commanded by a lieutenant-colonel comprising:

-- 2 battalions of 75 mm, rolling barrage;

-- 1 battalion of 75 mm and 1 battalion of 155 C, semi-fixed close up barrage.

In addition, two groupments under the orders of the Colonel Commanding the Divisional Artillery work in the zone of the Infantry Division:

-- one, of heavy howitzers (semi-fixed distant barrage);

-- one, of light artillery and heavy guns, mixed (takes care of distant covering and fugitive objectives).

The rolling barrage does not take on all its density until the start from the enemy's first line.

The two rolling barrage groups act in front of the battalion by superposing their fires.

THE TERRAIN AND THE OBJECTIVES

The terrain is a large plateau the crest of which is oblique with reference to the base of departure of the attack: at our left it is 2,200 yards distant from it; at the center, 1,100 yards distant; at the right it joins the base.

The 1st objective is constituted by the crest itself.

However, as the depressed bowl in which Allemand lies may be productive of surprises and as we have to join together in it two directions of attack, an intermediate objective is assigned. This intermediate objective follows the near edge of the bowl and enables us to take it more completely under fire before passing through it. (See Sketch No 54, heavy blue line--Tr.)

The second objective is traced along the foot of the northern slopes of the plateau. The advance on this objective will be made, through its entire length, on terrain that cannot be seen (by our artillery ground observation--Tr). Consequently, unprecedented precautions have been taken to insure that the infantry has the support of its artillery and each divisional artillery has been obliged to spread itself out over a width three or four times as great as the front of its Division (Sketch No 53).

The general time-table of the attack is:

H, Departure along the whole front, with a view to attaining the 1st Objective at the right and the intermediate objective at the left;

H + 1, Departure from the intermediate objective (for the left);

Up + 4, pause on the 1st objective; passage of lines;

H + 4, Departure to attain the 2d objective.

THE ENEMY

The enemy has not been surprised by the attack which he has been expecting since the middle of September.

From September 15th to October 15th, seven divisions have been pushed toward the threatened front. The day of the attack, the Germans have in this area:

-- in first line, 6 Divisions: 37th, 14th, 13th, 2d Guards, 5th Guards, 47th Reserve.

-- in second line, 3 Divisions (intervention divisions): 52d, 43d and 9th.

-- in reserve, 3 Divisions: 10th, 6th, 3d Bavarian.

A considerable reinforcement in artillery has also been put in. Sixty-four new batteries appear from September 15th to October 20th, forty of which are of large caliber. This makes a total of about 180 batteries, 63 of which are of large caliber, in our front of attack -- say an average of 10 to 12 batteries per 1,100 yards.

Before the attack we execute reconnaissances in all the sectors in order to verify whether the enemy is still really holding his front line or whether he has started a withdrawal (to the 2d line--Tr.) These reconnaissances bring back prisoners whose identifications and statements show that, far from evacuating his first position, the enemy, on the contrary, is trying to strengthen it and that he indeed has the intention of fighting on it.

EXECUTION OF THE ATTACK (October 23d)

The enemy artillery is nervous during the entire night of the 22d-23d October. It executes numerous fires, some of which take on the character of a heavy counteroffensive preparation on our departure positions.

At 5:15 AM (H hour) the attack starts in conformity with the orders issued. At daybreak, the first waves leave the trenches and departure parallels all at once and with marvelous spirit.

1st PHASE -- INTERMEDIATE OBJECTIVE

The intermediate objective was only for the left hand Corps--the 21st and 14th. This objective is reached by the first line battalions in one bound, closely following the rolling barrage. In certain units, some errors of direction are made on account of the darkness. These errors are quickly corrected, for, on account of the many rehearsals made before the operation, each unit knows its mission perfectly.

Our combat groups reduce the enemy machine guns that attempt to resist. They are effectively supported by a tank in front of the chateau de la Motte; the large Fruty and Malmaison carrieres (quarries--Tr.) are surrounded; the latter is captured after strong resistance.

The mopping up of the numerous shelters existing in the enemy lines is commenced immediately.

2d PHASE -- FIRST OBJECTIVE

The troops of the right hand Corps, the 11th and 39th, had been subjected nearly all night long to violent bombardments -- reaching, at certain moments, the intensity of wiping-out fires (ties d'aneantissement). At H hour they dash forward in attack, passing through a heavy barrage.

The attack succeeds, nevertheless, at the left of the 11th Corps, where the 38th Division reaches the 1st objective at 6:30 AM, taking the Fort de la Malmaison by main strength after having surrounded the Carrieres (quarries--Tr.) de Bohery, the siege of which latter is commenced with the aid of one of the two batteries of tanks which have been able to follow. The other battery of tanks pushes as far as the tranchee (trench--Tr.) de la Carabine, (southeast of the Fort de la Malmaison), which it attacks, but the difficulty of the churned-up, soaked ground forcibly halts any further progress.

Success is much less in the 66th Division which forms the right of the 11th Corps. The 6th Battalion of Chasseurs a Pied reaches the 1st objective in liaison with the 38th Division, but the center of the Division of Chasseurs a Pied suffers a nearly complete check. One battalion breaks up and mixes itself with the nearest units. The adjacent battalions make only insignificant progress, being stopped by the machine gun nests which have shown up. The right battalion, on the contrary, advances as far as the carriere (quarry--Tr.) du Charbon, in liaison with the elements of the 39th Corps (67th Division) that take part in the attack. These latter reach the first objective and at some points even get beyond it.

At 6:15 AM, the left hand Corps (21st and 14th) start from the intermediate objective toward the 1st Objective. The advance is made without great difficulties. The nests of machine guns that attempt to resist to the northwest of the Ferme de la Malmaison, on the slopes of the Mont de Laffaux and in Allemand are successively taken.

The enemy reacts with success only on the left of the 14th Corps, where the elements of the 129th Division that took part in the attack (one battalion, plus one company of the 297th) are violently counterattacked; they return to their departure trench and establish themselves in a defensive bend in the line, so as to cover the left flank of the 28th Division.

12-12-24
/fme

3d PHASE -- SECOND OBJECTIVE

In conformity with the time-table, the advance is taken up along the entire Army front at 9:15 AM.

In the 66th Division, the 2 support battalions execute the passages of lines contemplated in the plan. The left Battalion reaches the 2d objective in liaison with the 38th Division; but the other battalion, stopped immediately by machine guns, can only form a defensive bend, facing the northwest, in the tranchees du Fanion and du Tank.

The right of the 66th Division and the attack elements of the 67th are themselves obliged to fall back.

On this side, the line reached at the end of the day is marked out by the edges of the ravin d'entre 2 Monts-- the ravin du Bois de Veau -- tranchee du Fanion -- tranchee du Tank -- tranchee du Panthion -- tranchee des Bovettes -- tranchee du Souffre -- tranchee de la Molinite -- between the boyan de Breme and the boyan de Venin.

Everywhere else along the Army front, the 2d objective is reached after a more or less violent struggle.

At 1:00 PM, the 38th Division advances to the northeast edges of Chavignon, after a stiff fight in the tranchee du Casse-Tete and tranchee de la Carabine, as well as in the village of Chavignon itself.

At 3:00 PM the mopping-up of the carrieres (quarries--Tr.) de Bohery is completed.

In the meantime, in the 21st Corps, the tanks, which had been stopped at the beginning of the battle in the ravin du Toty by a violent barrage which had demolished the leading tank, rejoined the attack units.

At about 8:00 AM, some tanks had reduced the machine guns firing from the slopes of the ravin de Chavignon, from the southeast edges of the Bois de Belle-Croix, and repulsed a counterattack that attempted to debouch from the tranchee Dennewitz.

At 9:15 AM they start for the attack of the 2d objective, accompanying the infantry waves. They assist in overcoming the enemy's islands of resistance. These latter put up stubborn resistance against our infantrymen, who attack them with rifle grenades, auto-rifles and 37 mm guns.

One of the entrances to the carrieres Montparnasse has been blocked by falling in, but a large garrison is still holding out in it, defending the other entrances. However, its resistance is overcome at about 10:15 AM by grenade-throwers and the flame-throwing detachments. Many prisoners fall into our hands.

At about 2:30 PM, the 2d objective has been reached along the entire front of the 21st Corps, with the exception of some enemy elements that are still holding out in the Bois de Bouesseux, where they are successively reduced.

12-12-24
/fme

At the left wing of the Army, the right régiment of the 14th Corps executed, during this time, the bound contemplated for reaching the 2d objective. It is stopped in front of the tranchee du Lezard -- filled with defenders and machine guns -- and calls for a battery of tanks.

The trench is captured after a pause of one and one-half hours, and the advance continues as far as on the slopes of the Bois du Vallon where some machine guns put up a desperate resistance.

4th PHASE -- RECONNAISSANCES AFTER THE ATTACK

Beginning at 12:30 PM, the 21st Corps, conforming to the plan, pushes reconnaissances beyond the final objective.

One company sent toward Bois Dherly reports that no enemy elements have been met.

One platoon captures 75 prisoners and one machine gun at Point du Jour.

Finally, on the Crevettes plateau, small detachments are able to determine that the enemy is holding out in shelters in which machine guns have been placed.

LESSONS TO BE DRAWN FROM THE BATTLE OF la MALMAISON

Following this brilliant operation, General Maistre wrote a report upon "Lessons to be drawn from the battle." We shall note here the essential points of this report.

-- The minimum objective to assign ourselves in an important offensive is the zone of the enemy artillery positions.

-- Anticipate and study an exploitation that shall be as wide and as deep as possible, in case of success.

-- In proportion as the advance increases, enlarge the conquered zone by successive out-flanking movements--(a rule applicable to all units, small or large).

Anticipate, in advance, dispositions necessary to effect this.

-- The preparation should be short. It should attempt material and morale attrition of the enemy by generalized interdictions as much as by the destruction of his organizations and artillery.

-- To exhaust the enemy, a minimum of three days is necessary.

-- From the point of view of surprise, the shorter the preparation, the better; but multiple factors (atmosphèric conditions, state of the destructions)-- enter in -- which rarely enable us to keep to the minimum assigned duration of preparation.

-- We were able to simultaneously work 10 airplanes on a Corps front of 3,300 yards. This is a maximum.

-- The assembly places should be narrow, deep trenches.

-- The artillery was put in place in three or four days.

-- This time is too short to effect:

reconnaissances for emplacements, reconnaissances for observation posts;

the installation of party lines;

the getting into place of four to five days of fire;

the construction of shelters.

-- Two days are sufficient for the Trench Artillery to get its work well done. It is advisable to consider this at the beginning of the preparations.

-- The use of gas-shell in neutralizing enemy batteries has shown itself to be very effective and to be more economical than using explosive shell. For the long heavy artillery we may assume a percentage of 33 (in gas-shell -- Tr.).

-- There are too few men at the guns. We must have two complete crews, particularly for interdiction fires.

-- In the course of the attack we must not fritter away the action of the 75mm guns on a great many, on secondary, missions. First, assign to the rolling barrage the number of guns necessary, say two battalions per 440 yards. Do not vary the density except during the pauses.

"The rolling barrage is the fire par excellence for the infantryman; he sees it and he judges it. If he sees that it is dense and precise, he concludes in his matter of fact mind: "They are putting out!" -- and he "puts out". If he sees it thin, ragged, varying, if he passes through it without knowing he has done so (this has actually occurred), he thinks: "a poor job!"

-- We must count on 4 Divisional artilleries (12 battalions) per Division attacking on a three-battalion front. Two Divisional artilleries for the rolling barrage;

-- one for fires of all sorts: raking, combing, covering, counterattack, antiaircraft defense, action against anti-tank pieces, interdictions -- the use of which has become habitual;

-- one in the vicinity of the front lines, which is to intervene only during the course of the action:

-- At H hour, only the battalions charged with executing the first phase leave the departure trench; those charged with executing the second phase wait, under shelter, till the first act is finished. They then leave their assembly places at a moment when the artillery fire is either directed elsewhere or muzzled and, without loss, reach the line from which they will start the second act.

/imdr
12-13-24

-- The advance of the assault waves -- except in the first few minutes in passing through the enemy barrage -- has everything to gain by being slow and broken by pauses. This is the only possible way to avoid dislocation between the infantry and the rolling barrage.

-- The liaison detachments were charged not only with insuring liaison, but also with aiding adjacent units by moving around, and taking, resistances in flank. This should be generalized.

-- Tanks are indispensable. They have no role to play in the attack of the first lines. The farther we advance, the more important becomes their role.

III OPERATIONS OF THE 6TH CORPS FROM APRIL 16TH TO APRIL 21ST, 1917.

The attack of la Malmaison was made with extremely powerful means, corresponding to allotments which, no doubt, it will not always be possible to give. In what sense should the attack be oriented if we have less powerful means at our disposal?

We shall find a reply to this question in studying the operations of the 6th Corps from April 16th to April 21st, 1917.

THE MISSION AND THE MEANS (1) (Sketches Nos 55 & 56).

On April 16th, the 6th Corps is to attack in the sector:

northwestern boundary: The Oise--Aisne canal as far as the ferme des Vaumaires, thence the line: Monampteuil (exclusive)--Urcel (exclusive);

southern boundary: Chavonne--Ferme Rouge Maison--ferme Colomb (inclusive).

Its mission is to gain, in a single dash, the line: Monampteuil--Pont-Oger--Chavignon--woods to the north of la Malmaison.

Its front of attack, 4,400 yards at the start, increases progressively up to 6,600 yards.

It has 4 divisions, two of which are in first line: 56th to the north, 127th to the south, and two in reserve: 12th and 166th.

Its artillery allotment comprises:

60 batteries of 75mm;
36 batteries of heavy short;
30 batteries of heavy long;
14 batteries of trench artillery.

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(1) The parts in quotation marks are taken from the report drawn up by the Commanding General, 6th Corps, after the operation.

/imdr
12-13-24

or, per 1,100 yards, for an average front of 5,500 yards:

12 batteries of 75mm;
7 batteries of heavy short;
6 batteries of heavy long.

The terrain to be captured has been split up into 5 successive objectives which are to be reached, successively, at H plus 1 hour 15 minutes, H plus 3 hours, H plus 4 hours 30 minutes, H plus 6 hours and the close of the day.

THE ARTILLERY PREPARATION.

"The artillery prepared the attack simultaneously on the three positions, i.e., on a depth of more than 5,500 yards. Destruction suffered from the enormous amount of work thus imposed on the artillery, and, on the whole, while the first lines were completely destroyed by the trench artillery, there were gaps in the destructions effected in the other enemy organizations.

These gaps were due to an insufficient number of heavy pieces and to the bad weather which interfered with observation.

The distribution of the heavy short pieces among the Corps had initially been made in consideration of the enemy organizations as they existed in January. Now, these organizations had been considerably increased......

If the number of batteries of heavy short available...... does not enable us to allot the Corps what is necessary, it is better to try for less and limit ourselves, for the first day's attack, to the objectives which can surely be destroyed ......"

THE TERRAIN AND THE FORTIFICATIONS.

"The terrain over which the 6th Corps was to attack -- that included between Chavonne and the Oise-Aisne canal -- presented the following appearance:

In the valley, at the foot of the wooded buttresses of the heights of the north bank of the Aisne and with their back to the river, the French first lines passed through the Ferme Mont Sapin, the Chateau de Soupir, the Chapelle Saint-Pierre, the Ferme du Metz.

On the crests to the north and dominating our lines by more than 110 yards, the enemy's first lines were in contact with ours.

The line of wooded heights running from the Grinons to the Oise Canal comprises five very distinct parts: the three steep-walled natural amphitheatres of Chavonne, Soupir and the Ferme du Metz; between these three natural amphitheatres, two spurs descend perpendicularly to the valley: Mont Sapin and the Balcon du Bois des Gouttes d'Or.

Along the slopes, nearly at the foot of the cliff, pass the two first lines of the Germans; halfway up the slope, a third line, marked by the tranchee des Gouttes d'Or, is completely hidden from our ground and air observation. But the most dangerous element of the defense was the many flanking machine guns placed in the sides of the natural amphitheatres and on the crests of the Grinons, the Cour Soupir and of Bovettes, which could beat the bowl-like depression at

/lmdr
12-13-24

Chavonne, the slopes of Mont Sapin, the ravine to the north of Soupir and the bowl-like depression at the Ferme du Matz: all this constituted the first position of the enemy.

The second enemy position, comprising two lines, was along the plateau of the Croix san Tete, the Folemprise and Rouge-Maison farms and covered the nests of batteries of the Ostel ravine and the Jouy-Aizy ravine.

The third position, the Hindenburg line, followed the crest of the Chemin des Dames.

THE DAY OF APRIL 16TH.

In the night of April 15-16, the 4 divisions of the 6th Corps take up the dispositions set down in the plan.

The 56th Division attacks with the 106th and 132d Regiments abreast from left to right. The 10th Group of Chasseurs is in reserve.

In the 127th Division, the first line units are, left to right, the 355th Regiment, the 25th Chasseurs, the 172d Regiment. The 29th Battalion of Chasseurs is in reserve.

At H hour (6:00 AM) the attack is delivered along the whole Corps front.

The attack debouches perfectly, with splendid dash. The support line of the first enemy position is easily reached nearly everywhere except by the 132d, which is stopped by the fires of machine guns ranged in the natural amphitheatre of the Ferme du Metz losing, in a few minutes, its colonel, one battalion commander and several officers.

The 106th and the units of the 127th Division, in their turn, are stopped by the fires of numerous machine guns scattered in the woods and on the crest, in particular to the north of the Bois de la Bovette, in the natural amphitheatre of Soupir and near les Grinons.

One battalion of the 172d climbed the Balcon, but, with the left of the 106th, it is stopped in front of the tranchee des Gouttes d'Or, invisible in the middle of the woods and intact.

The 25th Battalion of Chasseurs jumped into the tranchee Tirpitz along the slopes of Mont Sapin, but its advance is very much slowed up by the machine guns of les Grinons, as is the advance of the 355th, some of whose elements, nevertheless, penetrate into Chavonne.

The enemy artillery, violently neutralized since the day previous by gas, manifested almost no reaction.

At 6:45 AM it becomes evident that the first bound ordered will not be executed at the hour prescribed......

After a new artillery preparation executed on les Grinons and the Cour Soupir, the advance is resumed at about 8:45 AM, but no noticeable advance is made on account of the new machine gun fires and the intact network of wire which extends along the tranchee des Gouttes d'Or.

/imdr
12-13-24

At the end of the day, the 6th Corps occupies about the general line: tranchee Harden--southern part of Chavonne--west and northwest edges of Mont Sapin--southern part of the Gouttes d'Or spur--cote 90.5--and, farther to the right, the first enemy line......

The sudden attack all along the front not having given the results hoped for, it was necessary to resume the attack on a new basis.

The shape and the accidented nature of the terrain which gave the enemy opportunities for terrible flanking fires -- nearly impossible to reduce -- did not permit a renewal of the attempt along the whole front. On the contrary, it was necessary to concentrate the efforts on selected points, so as to, with a maximum chance of success, get a foothold as soon as possible on the plateau of the Croix Sans Tete and on the plateau des Grinons. The artillery means at the disposal of the Corps should favor this concentration of efforts.

Consequently, the Commanding General of the 6th Corps ordered the Division Commanders to resume the attack on April 17th on a new basis and issued the following orders:

C.P., 16 April 1917, 9:00 PM.

I. -- ....

II. -- Tomorrow, 17th April, the Army will continue its offensive toward the objectives first assigned.

III. -- The intention of the Commanding General of the 6th Corps is:

1st -- As was prescribed in the order of April 16th, to get a foothold before daybreak upon the southern edge of the Plateau des Grinons--Cour Soupir--Bois Quartier, in order to constitute a base of departure; then, to capture the works recently organized on the summit of the plateau northeast of les Grinons, as well as the defensive organizations of the Croix Sans Tete; then to solidly install ourselves on the captured ground in order to be able to repel counterattacks.

2d -- On April 17th, to first advance the 56th and the 127th Divisions to the west edge of the plateau: Croix Sans Tete--Les Grinons, to capture Chavonne and to secure a foothold on the Chemin des Dames at Froidmont; to then follow up the attack in the general direction of the Fort de la Malmaison, in order to seize the Chemin des Dames......

IV. -- The attack of April 17th will be executed by the 56th Division and the 127th Division (plus two Senegalese Battalions)......

The hour of the attack will be fixed later.

Objectives:

56th Division -- west edge of the plateau of la Croix Sans Tete--Froidmont--thence the Chemin des Dames.

127th Division -- west edge of the plateau Cour Soupir--les Grinons--village of Chavonne.

V. -- ...... The preparation of the attack will start April 17th, beginning in the morning, by the artillery placed at the disposition of the Divisions; this preparation will be carried on so as to concentrate the fires on the parts of the front where the infantry is to make its principal effort......

DAY OF APRIL 17TH.

"On the morning of the 17th, the bad weather hampers the work of the artillery; at midday, however, the preparation is commenced on the selected objectives; concentrations (in which the 270's take part) are executed on the following points: les Grinons, the Cour Soupir, the caverne de Coblentz, the tranchee de Braye, la Croix Sans Tete.

At 5:30 PM, the hour fixed by the Corps Commander, the attack is delivered.

At the left, in the 127th Division, one battalion of the 355th and one battalion of Senegalese attack les Grinons; the 172d advances on Cour Soupir, supported by the 29th Chasseurs.

The Senegalese, protected against the enemy machine guns by the fires of the machine guns and 37mm guns of the 335th, dash to the crest of les Grinons; twice counterattacked, they fight back and remain masters of the terrain and of much material.

The 355th, at their left, reaches the caves of les Grinons and outflanks Chavonne by the north.

Near Cour Soupir, the 172d, reinforced by the 29th Chasseurs, gains possession of the Carrieres Sonterraines (underground quarries), where it takes a hundred prisoners and advances toward the crest.

But at this moment the game is already won at the right by the 56th Division.

At this side, the Division Commander of the 56th, justly considering that the obstacles met with at the right and center of his division were insurmountable, had ordered his left to outflank them by a principle effort through the Bois de la Bovette, with a view to escaping the fires of enemy machine guns situated on the crests of the amphitheatre of the Ferme du Metz.

The 3d Battalion of the 106th and the 65th Battalion of Chasseurs (placed under the orders of the regimental commander of the 106th) were designated to execute this maneuver. The vigor of their action was to make it successful.

At 7:25 PM, despite the difficulties of advance and the resistance of the occupants, these two battalions attain the northern edge of the woods (line 0303--Grande Carriere).

Beginning at 7:50 PM, the 65th Battalion of Chasseurs pushes its exploring detachments into the tranchee du Courant (2d enemy position). Feeling himself outflanked, the enemy, in the evening, tries to take away the many guns in position in the ravin d'Ostel; echelons of artillery moving from

Froidmont toward Cour Soupir are subjected to the violent fire of our artillery; night interdiction fires are increased; guns and limbers remain on the terrain.

DAY OF APRIL 18TH.

The advance which continued during the night was kept up the following morning, conformably to the orders of the Commander of the 6th Corps (No 25, CP, April 17th).

At 8:15 AM, on the front of the 56th Division, the Caverne de Coblentz, outflanked, has fallen into the hands of the 106th, while Cour Soupir was taken by the 127th Division.

The 106th Infantry and the 65th Chasseurs, increasing their advance, have pushed patrols as far as the tranchee de Brody.

On the right, the 69th Chasseurs, advancing along the Oise Canal, captured the tranchee de Braye during the night, and has advanced into the Bois Quartier as far as the southern exit of the canal tunnel, which it holds with machine guns. At 4:00 AM it had even pushed patrols into the village of Braye where it found ten 77mm guns.

The advance is carried on along the whole front and at 1:00 PM, the 56th Division occupies la Croix Sans Tete, tranchee de Brody and tranchee du Courant.

Then, the 106th descends into the ravin d'Ostel where it finds many guns, some limbered, which the surprised enemy has not been able to take away, and moves to the occupation of the chateau ruine, in liaison at the right with the 65th Chasseurs, which is in the tranchee de Gallipoli......

On the front of the 127th, after the capture of the Cour Soupir by the 172d, the plateau to the west of the Cour has fallen into our hands. The 29th Chasseurs has brilliantly taken one of the field fortifications that defended it.

The 172d, in liaison with the 106th in the bottom of the ravin d'Ostel, then reaches the Rochefort Ferme, then the Cerleaux Ferme and installs itself in the tranchee d'Andrinople.

At its left the 29th Chasseurs nearly reach Bascule.

The 355th, aided by the Senegalese, mops up the organizations along the banks of the Aisne toward the Essenlis Ferme and as far as Rouge Maison Ferme.

At 10:00 PM, the Corps Commander orders continuation of the pursuit of the enemy in order to get into contact with the German organization of the Chemin des Dames.

DAYS OF APRIL 19TH, 20TH AND 21ST.

The day of the 19th is employed by the 56th Division in establishing itself at assault distance (440 yards) from the Hindenburg line.

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12-15-24

The 127th Division also rectifies its lines, while the 294th, placed at its disposition, is to advance on Jouy, Aizy and push a detachment as far as the Ferme de Colombe.

Aizy is occupied the morning of the 20th by the 294th; Jouy, the evening of the 20th, while the 355th takes possession of the Hameret Ferme.

On the 21st, the 294th installs itself on the crest of Mont Sans Pain and of Mont des Roches, joining up with the 581st Division (37th Corps) which has occupied the Ferme de Colombe and pushed a detachment toward le Toty Ferme.

At this time contact is established on the whole front of the Corps up to the Hindenburg line and a continuous line is organized 330 to 440 yards this side of the latter.

LESSONS DRAWN FROM THE ATTACK OF THE 6TH CORPS.

"The plan of attack, at all echelons, must flow out of a maneuver idea. This maneuver idea must itself flow out of study of the terrain of attack -- study accompanied by personal observation.

A uniform and simultaneous attack along the whole front of a Corps, straight ahead, however sudden it may be, can succeed only on terrain having few accidents of the ground and no serious obstacles. An attack of this sort will generally go wrong. To reduce the resistance of the enemy it is not advisable to pierce everywhere; it is sufficient to get a foothold at certain of the most sensitive points of the terrain.

At these points, then, we must apply all our efforts (infantry and, above all, artillery).

We must -- maneuver.

This truth......was confirmed in a startling fashion on the days of April 16th and 17th, as regards the 6th Corps.

On April 16th, the attack of the 6th Corps is launched along the entire front at 6:00 AM; it is accompanied by the artillery in a uniform fashion along the entire front -- also in conformity with orders received. Shortly after its departure the attack runs into the machine guns that the enemy has accumulated at the very points which may be characterized as sensitive. These machine guns have not been destroyed during the preparation, both on account of their number and on account of the nature of the terrain, nor are they blinded by the accompanying barrage, which is insufficiently dense.

Result: the infantry is nailed to the ground; the very brave attempts it makes to advance cause it additional losses, but result in no gain of ground.

On April 17th, on the Corps Commander's order, the Division Commanders concentrate the fire of all the artillery -- during both preparation and accompanying fire -- on the two areas of the attack zone which, through the very form of the terrain, would surely cause the fall of the whole enemy position:

In the eastern part -- the region of the Bovettes,

In the western part -- the region of Mont Sapin--les Grinons.

Results: the 3d Battalion of the 106th, aided by the 65th Chasseurs, reaches the northern edge of the Bois des Bovettes in a single dash and without great losses. The 25th Battalion of Chasseurs, followed by the Senegalese, gains possession of les Grinons after slightly more marked resistance.

The enemy, surprised and feeling himself turned, hastily withdraws. The breach opens rapidly and, from the right to the left, the enemy's resistance falls like a house of cards.

The maneuver of April 17th triumphed over the resistances that the sudden attack of April 16th all along the front had been unable to reduce on April 16th."

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12-15-24

CHAPTER X

SECURITY

Every operation comprises at one and the same time measures having the object of action on the enemy and measures having the object of foiling the actions of the adversary or of guarding against their repercussions.

The greater part of this second class of measures is included under security.

We have already met some of these in the preceding chapters. We shall now attempt to group them and try to get a general view of security.

OBJECT OF SECURITY

Security, as defined in the Instruction on the Conduct of Large Units, has as object:

To enable the command to make its dispositions, i.e., to assemble its means and to put them at work with a view to fighting;

To insure the protection of troops against surprises on the ground and from dangers of the air.

This there is, in a way, command security and troop security; they answer to different requirements and it is advisable to examine them separately.

COMMAND SECURITY

In order to assemble his means and get them ready to put at work, the command has need of a certain amount of time and a certain amount of space.

It is clear that the measures to be taken are the more important as the time and space necessary are the larger.

Here again we must refrain from reasoning in the absolute -- the first thing to do is to determine real needs.

As regards assembling the means, the time necessary therefor is generally easy to calculate once the plan of assembly is made. When several hypotheses are possible -- as we have seen, for example, in the defensive -- as we naturally should figure on the most unfavorable one.

The question of space is put up to us in different ways, depending on whether the Unit is one of several in line, or is isolated.

When the unit is one of several in line, the problem most often reduces to a question of debouching. By that, we mean that a unit moving forward to attack the enemy must have the possibility of deploying itself on terrain favorable to the action of its different arms.

With the present development of the range of arms the depth of dispositions, the width of fronts and the distance to which the entrance to the battlefield has been pushed back, the problems of debouching appears to have lost part of the interest it had in the wars of the past.

Outside of river crossings and except for very difficult or very mountainous country we find few defiles, properly speaking; the troops are familiar with and can fight on the most different terrains.

But alongside of the question of necessity is the question of easiness, and we can easily conceive that it is easier for a given unit to fight on one piece of terrain than on another. If then, in order to gain the preferred field of battle we have to cross a zone in which we will be badly situated for a fight, it is desirable to arrange for ourselves the possibility of having to fight only on the far side of this zone and, in consequence, to assure ourselves of the possibility of debouching from it (i.e., the undesirable zone. --Tr.)

When the unit has another unit abreast of it on one side, or is isolated, it has one, or two, flanks uncovered. If the enemy is free to make moves, the unit is obliged to cover the threatened flanks during the time necessary for the operation considered. In this particular case, security requires something more than is indicated in the general definition. Here, it is more difficult to calculate time because, on account of the resistances of the enemy, the duration of the operation can be calculated only approximately.

In all cases the problem to be solved is always the same; prevent the enemy from occupying certain points or certain zones of terrain during a certain time. Just as in the case of gaining time, the terrain to be kept results from the needs of the main body itself; at the minimum, the following is demanded: that positions, i.e., lines of observation points which would enable the enemy to act by its fires on the zone in which our main body must move, must be occupied.

TROOP SECURITY

1st -- Against dangers of the ground.

All the points from which the enemy can observe the terrain where the troops must be or through which they must move are dangerous.

We have already studied the problem of protection in the attack and in the defense. The best thing to do would be, of course, to occupy the dangerous points; but we cannot always do this. We must, then, limit ourselves to neutralizing these points, or, if permanent neutralization is not possible, keep ourselves in readiness to neutralize them.

It is admitted that in this latter case we cannot say that the troops are absolutely secure; and if they are in action, a gap will exist during the entire time necessary for the intervention of the fire element charged with protecting them.

- What we can say is that in such a case the troops have a right to being protected, and this consideration gives a partial reply to the question we sometimes ask ourselves (a question which is unanswerable when a general case is made of it): Who is to call down the artillery fires? Shall the command do it? Shall the infantry do it?.

We think that a distinction should be made between the fires intended to support an action and the security fires proper.

It is inadmissable that a body of infantry should, of itself, undertake an action requiring the support of artillery that is not under its orders (i.e., under the orders of the infantry commander --Tr.) . But when the infantry is in a situation ordered by the command it has right to security, and if the intervention of the artillery is necessary to such security, it is evident that the infantry must be able to call down, itself, the fires of the artillery, every time that there is no order of the command to the contrary.

2d -- Against dangers from the air.

The only completely effective protection against danger from the air is dispersion and dissimulation from observation.

When these two things cannot be accomplished, we have only individual defense and the grouping, at important points, of means of antiaircraft defense.

During battle, this sort of security depends on the organizing of a regular air front (see preceding, Chapter VII).

SECRECY

Secrecy is a means of surprise but it is also a means of security.

The sooner an operation is unmasked, the more time has the enemy to hamper it and increase the obstacles to its success. Thus, for example, the shelter of natural cover becomes nil if the troops are seen when they go into it.

We must carefully note that as a matter of fact, security of the troops can not be continuously assured on the greater number of modern battlefields. Every element that has been seen by the enemy and which stays for any length of time in the same place, is bound to be exposed to a surprise by fire.

SECURITY DISPOSITIONS AS A WHOLE

In practice, while command security and troop security should be calculated separately, the means for developing this security can not be separated from the dispositions for security, and these dispositions should simultaneously take care of all requirements.

The dispositions as a whole made to effect this double security comprise:

-- organs of information moving out to get trace of the approach of the enemy at a distance sufficient to give us the time necessary to shelter ourselves or to interpose a protection detachment in the direction of danger;

-- security detachments sent when they are needed, or beforehand when we have not the time necessary to go and gather information at the desired distance.

The strength of these detachments may be more or less great depending on the lesser or greater readiness of the main body for action under the principal eventualities that may occur. In the Large Units we would be induced to take inacceptable measures if we demand everything from the organs of protection. So, the organs of protection should be calculated to meet the requirements of the main body, but, and also, the disposition of the main body should be so arranged as not to impose too difficult problems on the security detachments. It is in this sense, as remark the Regulations, that security can be built up on the dispositions of the troops.

In describing security dispositions as a whole, it is easier to consider the case of an isolated unit, after which we can easily make the adaptations necessary in the cases of a unit that has troops abreast of it, on one, or both, sides.

SECURITY DISPOSITIONS OF AN ISOLATED UNIT

An isolated unit should be, at the least, master of all the horizon that is dangerous to the zone of terrain the unit occupies or in which it moves.

Complete application of this rule results in scattering a cordon of security detachments around the central mass.

We know that depending on the direction of action of the main body, these detachments are named advance guards, flank guards or rear guards.

In practice, the solution to be adopted must consider not only the needs of the main body but also the different elements of the situation.

1st -- the terrain.

By limiting the range of arms, the terrain also limits the distance to which the security detachments should be sent out. In terrain that has many compartments or is covered, these detachments may be relatively close. On uncovered terrain, on the contrary, they must be pushed out a great distance.

2d -- the situation of the enemy.

When all directions are equally dangerous, we must guard ourselves with sufficient forces everywhere. An example of this would be the garrison of a place that might be surrounded on all sides. It will also be the case, in the future, for a unit charged with defending a zone that is threatened by aerial debarkation.

But, the greater part of the time, the dangerous directions are limited to one or two at the maximum. So we place strong detachments in the dangerous directions, and weak detachments in the others. And, depending on the direction in which we find the enemy, we will reinforce them, sometimes the advance guards, sometimes the flank guards, sometimes the rear guards.

The name of advance guard has sometimes been given to large detachments like these, no matter what their situation with respect to the direction of action of the main body. (1) However, though this generalization has the great advantage of clearly showing that the relative strength of the protecting elements must be calculated in consideration of the direction of the enemy, it may, in practice, give ground for confusion, and it is preferable to make use of their natural names.

3d -- The means of action.

The establishing of a cordon of security detachments such as is demanded by the terrain and the enemy situation may lead us into expenditure of strength out of proportion to the unit under consideration.

In that case we must seek variations which will give us an acceptable solution.

We shall consider first the possibility of substituting, for the protecting detachments, simple reconnaissance elements charged with seeking information at such a distance that we shall be warned in time. In this case, if the enemy does not intervene, the expenditure of strength will be limited to the strength of these reconnaissance elements.

In certain cases, if we are free to choose our itinerary or the zone in which we halt, we shall look for terrain whose nature enables us to reduce the distance to which it is nedessary to send protecting detachments. In this way we diminish the perimeter, and consequently the effectives, of the security disposition.

Finally, if these measures do not suffice, and particularly when the direction of the enemy's intervention is uncertain, it will be preferable not to keep the main body grouped together. When the enemy shall appear, the element placed on the direction that has turned out to be dangerous will take over the role of protecting detachment, the others will become available and will reconstitute the main body of the forces.

CONSTITUTING SECURITY DETACHMENTS

To constitute a security detachment is to fix its mission, the distance at which it shall act and its composition.

-- The mission must specify the general role of the security detachment, the duration of the mission and its conduct in case of attack by the enemy.

The general role and the duration of the mission are functions of the needs of the main body.

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(1) See the work by General Maillard; The Elements of War.

As regards conduct in case of attack by the enemy, it is necessary to examine each individual situation. We may do this in the light of what we have hitherto said on the subject of advance guards and outposts.

-- The *distance* to which the detachment should be sent depends, first, on the needs of the main body. Let us simply call to mind that this distance should be fixed only after attentive study of the terrain.

It depends also on the conduct of the detachment in case of attack. Depending on whether the detachment is to maneuver in retreat or hold on the spot, it will require a zone of action more or less deep.

-- The *strength* and the *composition* of the detachment are a function of its present role, of the duration of its mission and also, in a certain measure, of its ulterior mission.

There is no disadvantage in making the detachments on the direction of action quite strong, since we shall find them again at the moment of combat. This is the general case of the advance guard of troops that are advancing toward the enemy.

On the other directions the strength of the detachments must be figured down to just the right amount, basing the calculation upon the time we have need of and upon the probabilities of enemy intervention. From this point of view, each maneuver has its special exigencies, and we shall again meet this problem in Part Three.

As to the composition of a detachment, this is directly related to its strength and its mission. The light protecting elements must have information organs at their dispositions and, whenever it is possible, means for rapid displacement. Protecting elements having a combat role and required to act at a certain distance from the main body must have, in addition, the quantity of artillery necessary for them to accomplish their missions. It is not practical that they should have to ask, at every moment, for the intervention of artillery that does not belong to them and which, at their time of need, may be occupied elsewhere.

SECURITY AND RISK

Security obtained through protecting detachments is incontestably the best, but it can be secured only by taking fractions -- often large -- from the main body.

It may happen that we have not the means of effecting sufficient security and that we be, however, under the necessity of acting. The situation then becomes difficult.

We can substitute advantageously for insufficiency of protecting detachments only by obtaining and using all the information that will enable us to reduce the security effectives to what is strictly necessary and gather up the savings thus made.

12-13-24/bmmd

Outside of this method, there is left only the choice between slowing up the action and running risk.

When we do not feel secure we are induced to cut up our operation into shorter and shorter acts, each interpolated between two periods of resumption of the guard. From this point of view, we may consider the advance by successive bounds, the alternating of bounds, the bringing together of successive objectives, etc..... as so many procedures derived from our desire to be secure. The fact that, to a certain degree, they are forced on us, does not modify their character. The action would like to be, and it would be advantageous to be, rapid and continuous. It cannot be so, for it develops frictions which would not fail in completely stopping it, were we not to allow it to pause for breath from time to time. Therefore, the pauses thus made are a necessity and not an advantage. Multiplied beyond measure, they even weaken the action instead of facilitating it, just as too slow a march fatigues troops more than does the normal gait.

But it is not easy to specify the limit and it is certain that in practice, every time that security is insufficient, we feel ourselves,tempted to slow up the action. On this subject we should reread the study of the march of the Guyot-Lespart Division at Bitche in 1870, in Marshal Foch's "The Principles of War". We shall see that this division moved only infinitely slowly because its commander did not feel secure. The placing of a strong flank guard in the dangerous direction would have given him the freedom of mind that he lacked. But, as the commander did not think of this solution, he found no other method than to advance at an exceedingly slow gait. Military history is full of similar cases.

So, when we do not feel secure, we are induced to slow up our action. We are also led into weakening it, for, the enemy being neither fixed nor contained, dangerous eventualities increase and we yield to the temptation of enlarging our reserves in order to counter these dangers which are the more threatening as they are less clearly defined. There is, therefore, an exaggerated diminution of the effectives put into line and a consequent weakening of the action.

A weakening of action which may go so far as to render it impossible. Thus in 1903, the war correspondents had noted that the Russian idea of holding out reserves had led them into placing nearly all the burden of combat on their advance guards; and we can imagine what would be the result of an action reduced to that limit.

It is to be thoroughly understood that we do not propose the slowing up or the lessening of action as a desirable corrective to the insufficience of security. We only point out, as a fact drawn from experience, that we are led into taking these measures when security is not sufficiently assured.

The dilemma is the more difficult as an exaggeration in the allotment of protective detachments leads to the very same dangers; and the abuses into which we are led by making exaggerated sacrifices on the altar of security were clearly brought out into the light before the war by Colonel de Grandmaison, in a conference that excited a great deal of comment at the time.

So, let us avoid these exaggerations in both senses, when we, wittingly or unwittingly, yield to the temptation of trying to suppress all risk in warfare. We must admit to ourselves that this is an impossibility; there always will be risks and we must acknowledge this to be so.

We might even go farther and show in risk the antithesis of security. To do this, it would suffice to reverse the preceding discussion. Here, we shall content ourselves in saying that the great leaders have always accepted a carefully calculated amount of risk.-- an amount which was in proportion with their means and also with their personal temperament. And it would not be difficult to find, in history, the proof that the great successes have been often vouchsafed to those who have known how to accept the greatest risks.

CHAPTER XI

GATHERING AND INTERPRETING INFORMATION

In the preceding chapters we have seen how, on one hand, we could classify the manifestations of the enemy and how, on the other hand, what their influence should be on the solution of the principal problems of attack, of defense and of security. In order to simplify our discussion, we have assumed that we were informed on the situation of the enemy or, at least, on the most important elements of that situation.

In practice, the thing is not so simple as this. The situation of the enemy is not known to us in the synthetic form in which we would like to have it; we have only a series of chopped-off bits of information, incomplete, badly connected and often contradictory. Being such, they are useless. We must convert them in order to make use of them.

Another difficulty: the means of information and transmission at our disposal are not always sufficient to enable the commander to be constantly informed on everything that m interest him. In order to be well served, then, we must orient in a certain sense the activity of the organs of information.

These two problems are naturally interwoven and their ensemble constitutes perhaps the most difficult task of the command. The difficulty is the greater as it is most usually concealed. It escapes ill-informed military writers who, in their criticisms, more or less naievely set out before us the knowledge they have of the situation and the intentions of the two parties. (1) It also escapes beginners, for other reasons, and they frequently content themselves with passively registering the information they receive, without even asking themselves if they can make any use of it.

Naturally, it is quite difficult to give rules for this sort of work which is, in a way, analogous to the diagnosis in medecine. Certain individuals are quite gifted in this way; others slightly or not at all.

We recall the celebrated example at the beginning of the campaign of 1809. When Napoleon arrives at Donauwoerth on April 17th, the information given him is quite confused and contradictory.

"What does the Emperor do then?"

Instead of wasting his time in listening to gossip, he goes to his headquarters, shuts himself in a room, has the reports of the Marshals brought to him and for several hours studies and compares them most attentively.

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(1) It is probable, moreover, that it is quite impossible to completely set aside a thing that we know, and this is a fault that is inherent in all speculations on an accomplished act.

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Result:

The arrival of Napoleon at Donauwoerth transformed, as with a magic wand, the nearly desperate situation of these two Corps (Davout's and Lefebvre's) into a defensive disposition, thanks to which the mass of maneuver (Oudinot and Massena), activated by the great leader, effects the maneuver of Landshut....." (1)

Thus Napoleon had been able to see the light in what was, for Berthier, an indecipherable enigma. We may imagine what self-confidence, what superiority such a faculty of intuition can give a leader. And we can understand what Napoleon meant when in speaking of his adversary a few days later, he said: "The game was not even; one player saw the others cards."

Whether we are more or less naturally endowed, it is certain that here, as elsewhere, training is useful. Each one of us should drill himself personally and seek to develop a method of working. As a matter of fact, even if it were possible to give rules for the interpretation and the synthesis of information, these rules would be valuable only through the manner in which they would be applied and, in the end, everything would still depend on individual aptitudes, innate or acquired.

INFORMATION NECESSARY AND THE MEANS OF SECURING INFORMATION.

The greater number of decisions that we have considered up to the present may be made when we know the zone occupied by the enemy, the strength of the elements with which we are in contact and their general attitude.

In what measure can this information be furnished by the means at our disposal?

The organs of information are many. Their complete nomenclature is given in the course in staff work. To limit ourselves here to those that can be used in the Division and Corps, we shall confine ourselves to say a few words on the air service, the cavalry and combat considered as a means of information.

The air service enables us to explore in rear of the enemy's front. It may discover its important movements, its works, and, up to a certain point, note whether or not an area is occupied. But its power of watching is incomplete and intermittent. Consequently, it does not inform us completely on any of the points we have just considered. The information it furnishes must be completed by others.

The cavalry is above all adapted to determining with certainty the presence or absence of the enemy in a determinate zone and the apparent contour of this enemy. Generally, it will be ignorant of what is going on behind this apparent contour. It can maintain contact, and consequently watch the attitude of the adversary. In addition, large units of cavalry can pierce the enemy curtains and obtain contact of a certain value. So the information brought in by the cavalry added to that furnished by the air service already forms a relatively complete whole.

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(1) General Bonnal: The Maneuver of Landshut.

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12-13-24

Combat, offensive or defensive, according to whether the adversary to be reconnoitered is in position or in movement, enables us to determine the value of the contact in a measure proportionate to the strength of the unit engaged. In a previous chapter we have pointed out the different perceptible degrees of this value of contact: non-continuous fronts, continuous infantry barrages and non-continuous artillery barrages, continuous barrages of infantry and artillery. These, of course are only "marking stakes". The real situation will often be an intermediary one. Such as they are, they furnish a scale of comparison which enables us, in a way, to "place" the value of a given contact. We have shown elsewhere the combat procedures suitable to each one of these situations. If the combat thus engaged does not succeed, or succeeds too easily, it is because there has been an error made concerning the value of contact or else modification of this value during the course of the action; and this check,or success, constitutes real information.

This shows us that in interpreting information given by combat, it is not sufficient to consider it by itself. We must compare the real evolution of combat with what should have been its normal evolution if the situation had been such as we thought it.

For example, we have indicated the use of rupturing actions due to combined efforts of artillery and infantry and enlarging actions due to infantry alone as an attack procedure to be used against a covering position. It is very evident t if these enlarging actions do not succeed, if it is necessary to support them by a large quantity of artillery, the fact is that we have in front of us something stronger than a covering disposition and that we have arrived in front of a position of resistance.

Another example: started into the attack of what we thought was a position of resistance, we note that the enlarging actions are made automatically, so to speak, and without requiring the putting down of prepared fires. We conclude from this that a new fact has developed or else that there is a mistake in the value of the enemy resistance.

Therefore, it is by a comparison of what the normal development of combat should have been with its real development that we can interpret the information given by combat. Naturally, the interpretation will be the more exact as the basis of comparison shall have been the more carefully calculated. Consequently the commander will find it advantageous, when he plans an operation, to try to figure out its development in sufficient detail so that he can, at every moment, compare reality with his expectations. If we keep this general view (vue d'ensemble) under our eyes, each fact, each incident even, takes on special significance and all of them fit into a coherent whole.

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SYNTHESIS OF INFORMATION -- HYPOTHESIS AND PRECONCEIVED IDEA.

Proceeding as we have just said, we can form a useful idea of the actual resistance or action of the enemy. But this is not enough. We must not only know what is, but we must foresee what will be.

The decisions of the command are all decisions that take effect later on. The situation it is important to consider is not so much the present situation as it is that of the situation which will exist when the decision will be executed. If we want to hit at the right point, we must endeavor to foresee what the enemy will do, and, in order to do that, first endeavor to understand what he is doing.

The only known process for attaining this result is to make a hypothesis concerning the enemy. It is undeniable that this is a difficult thing and is not void of danger. If we do not watch ourselves, the hypothesis is easily transformed into a "preconceived idea". (1)

There is no telling the damage done by the preconceived idea. It is certain that it can completely turn the mind into wrong channels. When under the domination of a fixed idea we can see only the facts favorable to our hypothesis; we neglect the others and naturally prepare the deepest pitfalls for ourselves.

So, the hypothesis is a weapon that cuts both ways. In awkward hands it may be more dangerous than useful. But, we are indeed obliged to use it for there are no other procedures for arriving at a solution of the problem.

The hypothesis method is not, moreover, peculiar to the subject we are studying. It is common to all the experimental sciences; it has the same dangers in each; yet, it is recognized that it is the principal instrument of progress in these sciences.

Therefore we must use it, of necessity, despite all its disadvantages. The rules to be followed are given in all scientific treatises. It is preferable to look for them there. Let us call to mind here only that the hyp

Let us call to mind here only that the hypothesis is valuable only as an explanation of facts. It is essentially a mental construction, that is to say, a thing that is arbitrary and incomplete. It must be retained only if it explains all the facts known; otherwise it must be changed. Its principal use is in classifying facts and in calling attention to those that do not fit in with the initial hypothesis.

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(1) In ordinary military language, the expression "preconceived idea" has a double meaning. We say: *Have a preconceived idea concerning the enemy*, and *maneuver according to a preconceived plan*. These, of course, are two quite different things. Here we are concerned only with the first.

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12-13-24

In order to build up a hypothesis, it would seem that the best preparation is to attempt to "make up a history" of what the enemy has done so as to reconstitute, as exactly as possible, the beginnings of his maneuver. An operation, in fact, as we shall see in Part Three, is no a series of successive acts, each isolated from the others; it is something that holds together; and an exact knowledg of its beginnings will often furnish a valuable indication as to its ulterior development. This consideration may give special importance to information that is late in coming in, for, put in its place in the chain of known facts, it aids us to better understand them and may even show them up to us in a new light.

This "history", combined with the actions and reactio of the moment, evaluated as we have previously stated, constitutes the point of departure of the hypothesis. The rest is a matter of judgment and imagination.

DIRECTIVES FOR THE SEEKING OF INFORMATION.

To sum up:

-- formulate an idea of the evolution of our own operation and compare the real development of things with the expected development;

-- reconstitute as exactly as we can the beginnings of the enemy's maneuver, and, prolonging the movement commenced, try to infer from it its future evolution; such is the double preparatory work that appears to us to be indispensable to enable the command to draw up its directiv for seeking information.

The information called for by these directives must fulfill two conditions.

-- it must verify the hypotheses that the commander in debating in his mind;

-- it must bear upon things which are easily perceptible.

As a matter of fact, nothing is gained by asking for information which, it is perfectly apparent to everyone, is impossible to obtain. In every important act of the enemy there will be manifestations that are relatively easy to note. We shall try to discover them and it is the manifestations which will be the subject of specific questions addressed to the organs of information.

Theoretically, this is simple enough; in practice we meet a serious difficulty.

In order for the organs of information to do work of real value, they must be oriented on the needs of the com and must know what the important information is -- that wh must be most quickly secured and at any cost. In combat, as a matter of fact, the output of the very best informati service is limited; and if efforts are frittered away, the commands risks being neither sufficiently oriented nor oriented in time.

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12-15-24

Picking out the information necessary is an essential condition for proper functioning of the service. This condition is not easy to satisfy for there are two views of the matter.

One, that of the command, says: "I cannot foresee in advance all the manifestations of the enemy. On the other hand, the information may never be gathered in a simple form. It is through an ensemble of facts, of frequently slight indications, that I shall succeed in forming a clear idea of the situation. These facts mutually complete one another. Each one of them does its bit in clearing up the situation. Consequently, the subordinate echelons cannot judge of the importance of information that they secure. They must send everything to the higher echelon."

This view is evidently very defendable. But the view of the executant is no less so. "My means of investigating and transmitting are limited. I cannot observe everywhere nor gather information all the time; therefore I am obliged to make a choice. You, not I, have the elements necessary for making this choice. Tell me exactly what you want to know and I shall answer you; but it is on this condition only that you will be well served."

In this extreme form, these two views are irreconcilable and it is the command that finally suffers from it. We must bridge the chasm.

We shall succeed in accomplishing this if we will clearly note that information may be separated into two categories:

--one corresponds to decisions which are already made and which only await a determinate piece of information before being put into effect.

--the other corresponds only to potential decisions and tend chiefly to enlighten the command on the general dispositions and the intentions of the enemy.

It is the first, of course, that should be given first priority.

If the command has made a plan, it can determine in advance the situations which, in the development of combat, will govern the successive decisions that it will have to make. It is these situations that must be made known to the executants. They will then have a means of judging the points on which their observations must bear and of estimating the degree of priority of the information they have gathered.

Take, for example, a defensive situation. Our plan should have arranged for:

-- preventive actions of artillery and air service on the attack preparations of the enemy;

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12-15-24

-- during the preparation of the attack, counter-battery action directed more particularly at the enemy batteries firing on the position of resistance;

-- counteroffensive preparation fires;

-- movements of available troops and of reserves depending on whether or not we are in face of an important attack;

-- combinations of fires to be effected on certain points for the purpose of bringing about disassociation of the attacking elements;

-- the developing of maximum effect of the fires when the enemy shall approach the position of resistance;

-- the delivering of counterattacks in case the enemy's advance is stopped;

-- etc ......

The general situations corresponding to these acts, foreseen in the plan of combat, are easy to note. They are:

-- The enemy makes attack preparations on such a front;

-- The enemy makes a preparation with artillery on such a front;

-- The enemy debouches from his first line;

-- The enemy's first line reaches, or is about to reach such a point (point planned for the concentration of fires).

All this information which is indispensable to the development of combat will be given first priority and must be transmitted as soon as known.

This does not prevent the executant from gathering all the other information susceptible of interesting the command -- whatever this information may be. But as for this sort, it will be transmitted as an extra, in a way, or when there is opportunity to do so.

It would seem that the two different views can be reconciled in this manner.

THE UNKNOWN. -- SECURITY AND ACTION.

Whatever we may do, however active may be the organs for gathering information, however skilful may be the commander, we will never succeed in solving all the unknowns relative to the enemy.

However, we must act.

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12-15-24

It is because "in the development of operations each decision must come at its time. From this it results that, the time having arrived, the commander must never delay his decision under pretext of awaiting complementary information" (1).

Later we shall try to go more fully into the relations that should exist between the plan of maneuver and the plan of information, but, up to the present, we have said enough to show that the commander finds sufficient reasons for acting in himself, in his mission and in the elements of the situation.

At present we simply wish to ask ourselves what influence on his decision will be exercised by the greater or lesser amount of the, to him, unknowns of the enemy situation. For it is evident that action cannot be quite the same when we have information, and when we have none.

In the preceding chapter we have seen that there is correlation between information and security. From this the following results: to compensate for the lack of sufficient information we must develop our means for security, i.e.,

-- Increase the strength of the protecting organs;

-- Break up the operation into successive goals, which goals will be nearer together as the situation is more obscure.

These two measures, as a matter of fact, tend toward the same thing, i.e., toward avoiding the producing of important changes in the situation during the execution of the decision. The first opposes itself to possible or probable actions of the enemy during the operation; the second, by limiting the "range" of the decision, also limits the possibility of intervention by the enemy in the course of the execution.

But, as we stated in studying security, the use of these procedures always has the result of slowing up the action. We must accept them as makeshifts, not as customary things, and be careful not to exaggerate their use.

METHODS OF TRAINING.

In the last analysis, then, the plentifulness and exactness of information and, in parallel, the skilfulness of the commander in making use of it, have a direct influence on the vigor and the rapidity of the action.

The gathering of information is the work of a collectivity and progress to be made in this function is largely a matter of organization. From this point of view, therefore, it is very important not to lose the advantages of the experience gained during the war and to preserve the traditions which were responsible for the strength and success of our second section of the General Staff.

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(1) 1913 Regulations on the Conduct of Large Units, Art.17.

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12-15-24

But the interpreting of information is, of necessity, individual work. Of course, the commander can be assisted in this interpreting; but if he accepts this completely, it will not have the same value as if he had interpreted, or checked, the information himself.

Opportunities for training ourselves in this work of interpreting are not plentiful in time of peace. Nevertheless, we can recommend as a means of practice:

-- the studying of military history, in connection with making an effort to completing the obscure or incompletely known facts, also, by comparing the information possessed by one party at a given moment with the real situation of the other party;

-- the use of double-action map maneuvers in which all the executants can follow the general situation and attempt to solve, by themselves, the problems of interpretation that are presented to the commander of the side.

Finally, every time that we solve a tactical problem, it is also advisable to endeavor to note which of our dispositions may be perceptible to the enemy. This problem is, very evidently, the converse of the one that occupies the commander; but it is easy to understand that the habit of examining into the relations existing between what is, and what appears to be, might furnish priceless hints at a time of need.(1)

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(1) This is the method used in medical science in studying the symptons of a disease. See: La Méthode dans les Sciences, P. Delbet, Médicine.

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12-15-24

PART THREE

MANEUVER

CHAPTER I

THE PROBLEM

In Part II of this course we have studied how we could effect combinations of the different arms for the purpose of solving the elementary problems of marches, halts and combat. In doing this, we have been obliged to break up the war operation into a certain number of acts which we have examined in succession after having given them limits in a more or less arbitrary fashion. It was necessary, in fact, to firmly seat the technique of combat before attempting to commence other problems.

But the exposition would be incomplete if we stopped at that. We must now make a fresh step in advance and study the conduct of combat from a higher point of view.

In this case we are going to see a certain number of new difficulties appear.

To begin with, reality will present itself not in the form of successive problems, but in the form of a continuous problem. This continuous problem will be solved only by successive steps; but it is the commander's duty to fix these successive steps. It is his task to break up into successive goals the more or less distant mission assigned him. He not only has to solve problems; he also has to put problems to himself.

Moreover, the successive decisions the chief is thus going to make are not mutually independent. Each of them is governed by the preceding one and must prepare the way for the succeeding one. In order that there may be no incoherence, they must all flow out of the directing idea. This idea -- or this ensemble of ideas -- constitutes the plan of maneuver.

Finally, the multiple incidents of combat stir up a quantity of parasitic problems which constantly tend to fritter away the attention of the commander in a certain number of secondary directions.

It is by holding firmly to a few simple ideas, particularly at the beginning, that we can succeed in preserving a clear view of the ensemble and in orienting ourselves rapidly in the maze of ideas and events.

In approaching these questions, we do not make the claim of finding a recipe for the conduct of combat. The difficulties are too great for any of the results that we may hope to attain through method. We cannot be great commanders without the power of intuition -- intuition that analysis may succeed in discerning, but which analysis does not give to us. At any rate, we can hope to make use of the gifts we do possess only by demanding from work and from method all that they can give us.

Let us attack the problem, then, not in the vain hope of solving it completely, but with the more modest object of trying to make a useful approximation to the solution.

"Maneuver" states the Instruction on the Tactical Employment of Large Units," has for object the combining of the use of forces with a view to accomplishing the mission assigned by the command."

"Before every operation, the commander of a Large Unit establishes his maneuver......"

"He gives the precise details of his conception and translates it into a plan of maneuver."

"This plan indicates the general object of the operation and marks out the broad lines of the maneuver....."

"Once the operations are commenced...... the role of the command is to maintain the broad lines of his plan of maneuver and to adapt its conditions to the events; thus, by successive retouchings, the command insures that the evolution of the maneuver will be toward the desired goal that it has set itself.........

These few lines constitute the theme which we have to develop.

In it, we may note two master ideas:

1st -- The maneuver has as object the combining of the employment of the forces;

2d -- The commander must preserve the broad lines of his plan, but adapt its conditions to events.

To combine the employment of forces is not simply combining the employment of the different arms with a view to a limited object; it is also combining the operations of units of all arms in an action of the whole.

We have already shown, as they have been needed, a certain number of these combinations; but it is advisable to make a separate statement of them, since they are what constitute the elements of the plan of maneuver.

After we have brought out these elementary combinations, we shall have to ask ourselves how the commander can use them to build up his plan.

12-15-24
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In order to do that, we must have a view of the ensemble of combat.

Therefore we shall have to ask ourselves how the decisive element of the combat is produced and how the commander can influence this decisive element. In this way we shall be led to examine into the principal known types of maneuver -- wing maneuvers and central maneuvers -- to note their requirements for success and to see what the combinations of forces are which are suitable to each.

After that has been done, the plan of maneuver will appear to us as a choice among several different maneuver procedures and the only thing remaining to do will be to ask ourselves upon what we should base ourselves in making this choice.

To guide ourselves in this study we shall have recourse, as far as is possible, to examples drawn from the late war, but, whenever necessary, we shall not hesitate to call upon the teachings of preceding wars.

The new conditions surrounding war have greatly modified technique, of course, and it would be foolish to try to draw lessons from the past without transposing them into and adapting them to present-day necessities. But, on the other hand, we must not believe that we can find nothing useful in the lessons of past wars.

In every maneuver there are two things: an idea, and its realization. Now, while the realization is always dependent on the conditions of the moment, it often occurs that the fundamental idea varies but little throughout the centuries.

The pre-war German regulations stated that the conditions surrounding future wars would be such as to render useless the rules set down by the great captains. And yet, at nearly the same time, one of the best German military writers was making a study of the battle of Cannes (Cannae--Tr.) the basis of a strategic doctrine.

Now, what do we find in this battle of Cannes? (Sketch No. 58).

Without entering into further detail, we can distinguish three phases in it.

1st Phase -- Hannibal's army, ranged for battle, presents a convex front toward the Romans.

2d Phase -- Combat being engaged, Hannibal's center falls back slowly while the wings hold fast so as to present, at the end of the movement, a concave front to the enemy.

3d Phase -- The Carthaginian army moves forward and the vice closes on the Roman army.

Is there not a striking similarity between this maneuver and the one that preceded the first battle of the Marne? Does it not seem to have been the same fundamental idea that was brought into being?

12-15-24
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The study of even more ancient wars, then, may be full of suggestions provided we do not ask of them more than they can give.

Still another reason forces us to turn to the wars of the past. We note it in the preface of the Instruction on the Employment of Large Units.

We find it under the heading: Physiognomy of Operations:

"The enormous masses put into the field as a result of obligatory service and the forming of coalitions were able, in the course of the last war, to establish continuous fronts of an extent such that the wings extended to and were supported against impassable obstacles. As the power of fire can only increase, and parallel with it, the value of defensive organizations, it is to be presumed that similar situations will be reproduced in the future."

"But the present military condition of Europe enables us to foresee that, at the beginning of a campaign, the forces in sight will consist simply of armies of limited strength intended to protect the levee en masse or to hamper that of the enemy. These armies will be called upon to maneuver in using the open spaces. A similar situation may also occur when attrition of forces shall have enabled us to break a continuous front and to create intervals. At the close of the late war, this possibility looked promising in Belgium and occurred in Macedonia."

For all these reasons, therefore, we must point out -- for the conduct of large units -- methods and procedures not only for the case of continuous fronts but also for maneuver in open spaces."

So, we may expect that the next war will commence with operations in which the two adversaries will be able to use open spaces. Now, this situation did not occur in the second part of the late war. From this point of view, therefore, there is a gap in our immediate experience, and it is by going back to the experiences of the past that we can fill this gap.

Finally, it is often dangerous to prepare exclusively for what we think the form of the next war will be.

We may, in fact, deceive ourselves in our calculations concerning the next war -- history has shown this many times. The slow wars of the 17th and 18th centuries were succeeded by the crushing campaigns of NAPOLEON. The rapid maneuvers of Sadowa and Saint-Privat were followed by the slowness of stabilized warfare.

No one can claim that the cycle is closed from now on. No one can affirm that no reaction will occur.

It is advisable, therefore, to start off with a rather broad theory, free, at any moment to use only so much of it as corresponds to the needs of the moment.

12-15-24
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CHAPTER II

THE ELEMENTARY COMBINATIONS

To make a plan of maneuver, as we have said, is to combine the use of the forces at our disposal with a view to accomplishing the mission assigned by the Command.

It is evident that the combinations we can make are very numerous. Nevertheless, we believe it possible to bring them down into three groups:

-- combinations of the directions in which the different elements of the large units will act;

-- distribution of the forces on the front of action;

-- measuring out of effort during the course of combat, or, if this form of expression be preferred, proportion to be established, in the different periods of combat, between the troops engaged and the troops in reserve.

The plan of maneuver will be the synthesis of these three elementary combinations.

In this chapter we shall try to present a first idea of these combinations and of the conditions governing their use. In doing this we shall in succession examine into each of them, in the three situations we considered in Part Two of this course, i.e.,

-- offensive against an enemy in position;

-- defensive;

-- offensive against an enemy that is attacking.

These three cases are theoretical, of course, in the sense that real combat may involve the same unit in them simultaneously or successively. But we have already seen that they present sufficiently well-defined characteristics to justify their being consi-separately.

I. -- COMBINATIONS OF DIRECTIONS

The most elementary maneuver procedure (at all events the first one that was used) is the combination of two directions of attack. Its simplest form is the pinchers attack or front attack combined with flank attack.

At first sight it would seem that this procedure could not be used on the immense fronts of the present day; that, there, all possibility of combinations of directions had disappeared and that we would be reduced to parallel actions. This is true to only a certain degree.

OFFENSIVE AGAINST AN ENEMY IN POSITION. BATTLE OF MONTDIDIER (8 August 1918) (Sketch No 59)

On August 8th, 1918, the French First Army was placed for the time being under the orders of the Marshal Commanding in Chief the British Armies. It is to attack with its left, in liaison with the British army.

The General Commanding the First Army proposes:

In a first phase, to enlarge the debouchment along the Luce by pushing at top speed toward the Mezieres--Bois de Genonville plateau; to force the passage of the Avre near la Neuville- Sire-Bernard; to thus obtain an Army bridgehead including Fresnoy-en-Chaussee, Plessier-Rozainvillers and the Bois St-Hubert (northwest of Contoire).

In a second phase, to conquer the Hangest-en-Santerre--Arvillers plateau; to gain a foothold south of the Avre, throu Davenescourt and Bouissicourt; then to complete the threat of encircling Montdidier by delivering an attack (35th Corps) in the direction: Assainvillers--Faverolles.

In a third phase, to progress rapidly to the east of Montdidier.

The First Army has only a very small allotment of tanks (2 battalions of light tanks); the General Commanding the Army reserves them for the most important phase of his maneuver -- the occupation of the Hangest plateau (2d phase). The attack, therefore, will start after a short and violent artillery preparation.

The artilleries of the two northern Corps (31st and 9th) will be, partly, turned over to the southern Corps as soon as the 31st and 9th shall have debouched.

On August 8th, the British attack, supported by numerous tanks, debouches at 4:20 AM, without artillery preparation.

At the same hour (4:20 AM) the 31st and 9th Corps commence their artillery preparation.

At 5:05 AM, the 31st Corps advances, its axis being in a southeasterly direction. The 42d and 37th Divisions lead, the 153d and the tanks are in second line, the 126th in third line.

As soon as the 37th Division has captured the Bois de Moreuil, the 66th Division penetrates into Moreuil and Morisel and mops them up.

At 9:05 AM, at the moment the 31st Corps arrives abreast of the Bois de Genonville, the 9th Corps commences to debouch from the Avre, and attacks toward the east; 15th Colonial Division at the left, 3d Division at the right.

The front reached by the Army on August 8th is marked out by the eastern edges of Fresnoy-en-Chaussee and Plessier-Rozainvillers and by the west edge of Bois St-Hubert.

The entrance into action of the 35th Corps depended on the capture of Hangest-en-Santerre and was initially contemplated for August 10th. But at about 11:00 AM on the 9th, Hangest-en-Santerre is taken by a combined action of the 126th and 153d Divisions. So the General Commanding the First Army gives (at noon) the 35th Corps the order to execute the attack (prepared in advance) in the direction of Assainvillers.

The attack of the 35th Corps starts at 4:00 PM. The enemy is completely surprised. He had, however, been able to see the preparatory movements of the main bodies of the 169th and 138th Divisions, as well as those of the 46th Division. He is hypnotized, no doubt, by the attacks to the north of Montdidier and is not expecting an extension of the front of attack in broad daylight.

At the close of the 9th, the 31st Corps has taken Arvillers and has approached close to Davenescourt. The 9th Corps, which has taken its objectives, passes into Army reserve. The left of the 10th Corps has commenced to debouch in the area: Contoire--Pierrepont. The 35th Corps has captured Assainvillers and pushed on as far as Faverolles.

In the night of August 9th-10th the Germans succeed in evacuating the Montdidier pocket and on the morning of the 10th, the whole First Army starts pursuit in the general direction of Roye.

Examined from the special point of view of combinations of directions, this battle of Montdidier may almost be considered as a series of attacks in square:

-- combined attack of the 37th and 66th Divisions on the 8th at about 7:00 AM;

-- combined attack of the 31st and 9th Corps on the 8th at about 9:00 AM;

-- combined attack of the 31st and 35th Corps on the 9th at about 4:00 PM.

Combinations of directions are not reserved for the Army Commander alone. We frequently find them at lower echelons. There are several examples of them in this very same battle of Montdidier, in particular in the 66th Division and in the 9th and 10th Corps. One of the most characteristic is that of the 152d Division.

The 152d Division had to make the passage of the Avre in the region of Pierrepont and the problem of the direct attack presented the greatest difficulties. So, as soon as the 3d Division at the north had succeeded in conquering the debouchment of Braches, we see the main body of the 152d Division orient itself toward the north, pass the Avre behind the 3d Division, then, turning back toward the south, take in flank (in the region of Contoire) the troops that were opposing the direct passage (of the Avre--Tr.) (Sketch No. 73). (For a complete discussion of The Battle of Montdidier, see file 940.4 GSS Library--a translation--Tr.)

12-15-24
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The presence of a fortified front does not exclude the possibility of combinations of direction. We are able to note their use in the attack of the intermediate objective in the battle of la Malmaison and in the operations of the 6th Corps on April 16th, 1917. (Part Two, Chapter IX).

CONDITIONS GOVERNING THE USE OF COMBINATIONS OF DIRECTIONS

Two conditions appear to be necessary in order to effect combinations of directions; the enemy front must have sinuosities and the terrain must have a sufficient number of compartments.

The enemy front must have sinuosities. Such was the case in the examples we have just seen. If the enemy's front were straight, we should first have to make a breach in it. Only after so doing could we hope to attempt combinations of directions.

The terrain must present a sufficient number of compartments so that our converging actions do not develop on a terrain all of which is subject to the same system of fires, for, if this were so, one of the movements would be taken under oblique fire. To be sure, we can succeed in improving the compartment effect of a given terrain by a system of appropriate artillery fires; but we can never succeed in creating in entirety this compartment effect.

We have stated that when the enemy presents a rectilinear front, combinations of directions should be set aside at the beginning, but that they might be taken up later on.

They often appear, therefore, in the form of direct actions of the troops in first line, combined with encircling movements effected by the troops in rear. This maneuver was effected at Montdidier by the 66th Division and the 9th Corps. The plan of engagement of Mangin's Army in the region of Villers-Cotterets was conceived according to the same order of ideas. If we glance over the sketch annexed to this plan of engagement (Sketch No 60) we shall see that the first line divisions are intended to drive straight ahead into the open spaces, while the second line divisions are to make wide enveloping maneuvers and to mop up around the islands of woods or the particularly difficult terrains that, at the beginning, might have broken the dash of the attack.

This is a valuable procedure, because these enveloping maneuvers may not only be considered in the cases of woods or places (villages, etc--Tr.) but also for any zone of terrain which, though it might be easy to traverse, would be of too unfavorable a nature to readily lend itself to combined actions of infantry and artillery. If we consider from this point of view what we have termed the plan of conquest of the terrain, (Part Two, Chapter III) we shall readily note that the successive objectives at which we arrive through this procedure are so traced as to effect real combinations of directions.

12-15-24
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We, of course, are limited in the using of these combinations by the necessity of not too frequently changing the zones of action of the artillery. This is a problem that presents some difficulty but which is not unsolvable. We shall examine it in greater detail in Chapter V, when studying the welding together of the wing attack and the direct attack.

DEFENSIVE

In Part Two, Chapter VI, we have seen that it was advisable for a pure defense to present a rectilinear line to the enemy and that it did not attempt to get combinations of directions.

But combinations of directions nearly always reappear when the defender resumes the offensive. We may note this by examining the axis assigned the counterattack of Mangin's Army on June 9th, the direction given to the attack of July 18th and, in a general manner, in all the offensives of July and August, which are directed against the flanks of the pockets dug in our front by the German offensives in the spring of 1918. Finally, the counterattack of the 114th Battalion of Chasseurs on June 23d, 1916 (Sketch No. 40) shows us that partial counterattacks themselves may be the occasion of combinations of directions.

We have also shown, in studying counterattacks of the whole, why it is advisable to give them a flank direction with respect to the general enemy attack.

OFFENSIVE AGAINST AN ENEMY IN MOVEMENT

When the two adversaries attack simultaneously we frequently see spontaneous breaks produced in the front of combat. These breaks naturally open the way for combinations of directions.

A break of this sort was started in the first battle of Guise (see Part Two); the 1st Corps, however, was not able to profit by it.

On the other hand, we find the example we are seeking in the battle of Fere-Champenoise (9th September 1914)(Sketch No

Up to the evening of September 7th, the front of the 9th and 11th Corps passed through Oyes, Broussy, Bannes and the railway line from Normee to Sommesous. On the 8th, a very violent German offensive on the 11th Corps pushes back the front of this latter to the line: Connantre--Oeuvry and the 9th Corps is obliged to withdraw its right so that it faces Fere-Champenoise. Partial counteroffensives succeed in stabilizing the situation for the time being.

But, on the morning of the 9th the Germans resume the advance, pushing on as far as Maurienne.

At the same time violent fighting is going on in the region of Mondemont.

During the night, General Foch, commanding the Ninth Army, is informed that the 10th Corps is placed at his disposal. He profits by this in relieving the 42d Division which he places in Army Reserve at Pleurs. (8th September, 10:00 PM).

Beginning on the morning of the 9th, sure that his left is secure from that time on, he decides to also attack at the right. At 10:15 AM he writes: "The 42d Division will arrive on the front: Linthes--Pleurs. Whatever be the situation in the 11th Corps, whether this 11th Corps has fallen back much or little, we expect to resume the offensive with this 42d Division toward Connantre and Corroy, an offensive in which the 9th Corps will take part against the front: Morains--Fere-Champenoise...... ."

And a little later:

"The 42d Division is at present in march from Brayes toward Pleurs. Have this division arrive faced toward the east, between Pleurs and Linthes, so that it can later attack in the direction of the hole between Oeuvry and Connantre."

"This attack will be aided at the right by the 11th Corps, at the left by all available elements of the 9th Corps, which will take as objective the road between Fere-Champenoise and Morains-le-Petit."

Consequently, between 3:00 PM and 4:00 PM the following orders are given to the 9th and 11th Corps:

Moroccan Division.--Remains in the region of Mondem

(17th Division(2 Regiments: attack in direction of
((Morains.
((1 Regiment: in reserve.
9th Corps (52d Division (103d Brigade: attack in direction of
((Ecury.
((104th Brigade: holds the knoll south-east of Allemant.

42d Division: will capture the large knoll: Connantre--Connantray, then the line: Normee--Lanharree.

(21st Division.--attack between Corroy and Gourganc
11th Corps (18th Division.--between Gourgancon and Semoine.
(22d Division. --to the east of Semoine.

And the attack commences to move off at 6:00 PM.........

This phenomenon of breaks in the combat front is frequent in occurrence and of special importance when two Armies meet each other obliquely. For example, this is what occurred in the battle of the Ardennes in August of 1914. The French and German Armies engaged at nearly right angles to each other and from this resulted a fragmentation of the battle into five or six different isolated combats in the course of each of which we saw combinations of directions come into play. (Sketch No 84)

To sum up: the procedure of combinations of directions remains applicable in modern battle, not only at the wings, but also in the interior of the battle field. Let us remember, for the moment, that in order to be used it requires two conditions:

-- existing--or expected--sinuosities in the enemy front;

-- terrain that is relatively compartmented.

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II - DISTRIBUTION OF FORCES ON THE FRONT OF COMBAT

OFFENSIVE AGAINST AN ENEMY IN POSITION

A second maneuver procedure, as we have said, lies in the distribution of forces along the front of attack.

That is a relatively recent idea. We find little of it in the combats of ancient times. Only during the wars of the Revolution did it come into current use. It was the First Napoleon who fina gave it a place on the field of battle although it was chiefly in the domain of strategy that he made use of concentration of forc (Sketch No 62).

We have seen that under present conditions, the execution of an attack requires so great a development of means and of fires that, generally, we are not rich enough to attack all along the front at the same time, and that it is necessary to concentrate our efforts, at least the greater part of them, on that part of the front which is to become the zone of principal attack.

This procedure was of current use during the war, where we always commenced by strongly reinforcing the fronts on which we wished to attack. The information concerning the bases on which this reinforcement was made may be found in the Annexes to the Instruction of 1917 on the Offensive Actions of Large Units.

The same rule was applied within the Armies.

Let us consider, for example, the general distribution of forces along the front of the First Army on August 8th (sketch No 63). We see that along the left wing of the Army -- representing about one-third of his front-- the Army Commander has accumulated one-half his infantry and two-thirds of his artillery. As a matte of fact, it is the left wing which is called upon for the rupturin effort-- or the push -- planned to create the situation which will be exploited the next day by the entrance into action of the 35th Corps.

Let us also glance over the dispositions of the First Army for the first phase of the second battle of Guise (sketch No 64). We see that economy has been pushed to the extreme on the front of t 8th Corps which, with its four divisions, must hold (behind the Oise, it is true) a front of twelve miles, while the remainder of the Army prepares to act on a front of eight and one-half miles or less than the front of the 8th Corps alone. It is scarcely necessa to add that the mass of the artillery of the Army, the air service the tanks, etc.... are in the principal zone of attack.

We know, moreover, that the Instruction on the Employment of Large Units particularly recommends this maneuver procedure:

"The ensemble of these measures (preparatory for battle) has for object the putting at work of all the means at the disposal of the Army."

"They tend toward effecting an attack which will be put throu with all the means that the Army Commander can apply to this purpose, in a direction in which success will give decisive results."

"Other attacks will take place along the entire (Army--Tr) front; they will serve to support at the side of and aid the principal attack of the Army."

This procedure, suitable for the "Army" unit, is it also suitable for the lower units, the Corps and the Division? Yes, the Instruction tells us.

"The Corps Commander endeavors to insure success in the essential direction or on the essential points by organizing a principal attack to which he devotes the maximum of his force. He accompanies it (the principal attack--Tr) by other attacks which support it or cover it. (Art. 153)".

And for the Division

"If its first objective has not been assigned to it by the Corps Commander, the Division Commander chooses it himself along the direction and in the zone assigned to the Division".

"The capture of this objective is the object of an attack put through with all the force that it is possible to employ in it."

"Secondary actions may be necessary for a good execution of this attack, some for capturing the points of the terrain which we must have beforehand, some to insure that the attack is properly aided."

These three statements are nearly duplicates. The use of this procedure therefore seems indeed to be of general use, for these three echelons at least -- with, however, the soft pedal as regards the Division. We could not, indeed, generalize infinitely the use of any maneuver procedure, however interesting it may be.

CHOICE OF THE ZONE OF PRINCIPAL EFFORT

In the Army, the zone of principal effort is generally dictated by considerations of a general order. This attack is executed "in a direction in which the result will give decisive results."

At the subordinate echelons, Corps and Divisions, the importance of the results expected may also have an influence on the choice of the zone of principal effort. But, most often, we are obliged to confine ourselves to the more prosaic motives that we developed in Part Two: the means at our disposal and the terrain.

Our means. Our maximum limit of possibilities is habitually given by the amount of artillery at our disposal. If we had enough artillery to attack all along the front at one time, there would probably be no reason to look for a zone of principal effort. For example, we find none in the plan of attack of the 31st Corps at Montdidier; but this Corps had along all of its front 30 batteries per 1,100 yards. It could attack all along its front at once.

But whenever the means are less than twenty batteries per 1,100 yards of the front to be attacked, it is no longer possible to attack at every point of the front with the same intensity. We must choose a zone of principal effort. This will often be the case when the Corps attacks a position of resistance (sketch No 43); it will nearly always be the case for the Division in the preliminaries of combat. (Sketch No 35)

The terrain. We have seen that the zone to be chosen for the principal attack will nearly always be indicated by the terrain. It will be the zone in which the attack (the attack of a width forced on us by the means at our disposal) can be best supported and best pushed to the greatest depth:

To sum up: considered from the point of view of distribution of forces along the front, maneuver appears as an accumulation of effort upon a part of the front, which part of the front is calculated in accordance with our means and selected on account of the possibilities promised by the terrain.

This sort of procedure enables us to advance on only a part of the front. This is not sufficient. "For, (Art.112) if the front of the advancing troops progressively reduces, the range of artillery enables the enemy to converge fires under which the head of the attack is broken and ends by stopping." Therefore it is necessary to enlarge the front of advance and to do this we must choose a new zone on which to concentrate efforts. It is the old method of alternate blows, of which we saw so many applications during the war and which consists of striking rapidly and successively on different points.

In the very large units, the Army, for example, we are obliged to proceed by lateral displacements of reserves of all arms, when the new point of attack is a little distant from the old one. Thus, at Montdidier, beginning at noon on August 8th, a part of the artillery initially assigned to the 31st and 9th Corps is progressively placed at the disposal of the 10th and 35th Corps.

In the Corps, unless it is acting on a very extended front, these lateral displacements are generally less necessary. As a matter of fact, what we need to concentrate on the front of attack is projectiles, not guns. Given this condition, the great range of artillery allows us to spread it out. Moreover, we find a double advantage in this; the plan of attack is less apparent and, in addition, we give ourselves facilities for later placing the mass of fires on another part of the battlefield (Sketch Nos 43 and 44).

DEFENSIVE (RESISTANCE)

We may consider the idea of the principal position of resistance as the full equivalent of the idea of the principal attack. To show that, it is sufficient to note that while the attack chooses its terrain in the sense of width, the defense chooses it in the sense of depth.

To a lesser extent, we may also connect with the idea of the principal effort, the procedure which consists of more particularly reinforcing the defense of certain important points or sectors of the principal position of resistance.

OFFENSIVE AGAINST AN ENEMY IN MOVEMENT

The fact that both adversaries are attacking does not do away with the necessity of choosing a zone of principal effort, when the means at our disposal are not sufficient to enable us to attack everywhere.

There are, however, two new elements which influence, one, the moment at which we must make our choice, the other, the choice itself.

In the attack of an enemy in position, the position really exists; we can determine it more or less exactly on the ground. In any case, before building up our plan of attack, we can wait until the engagement of the first line units has given the resul we can ask of it.

In the case of an adversary in movement, we shall indeed see at a certain moment, something form itself into a sort of position of resistance; but there will be, for a long time, much uncertaint as to the points along which it is established. And the attack, if it is to follow the engagement without interval of time, must ofte be prepared and started before the enemy's front is fixed. In this case, still more than in front of an enemy in position, must the attack be calculated in advance and calculated according to the terrain.

But on the other hand, we have seen that when two adversaries attack, spontaneous breaks occur quite frequently in the fronts of combat. These zones of breaks constitute weak points which can be noted and sometimes even foreseen. Naturally, they are the ve places to be used as objectives of a principal attack. This is was done at Guise and Fere-Champenoise.

So, in the case of two adversaries attacking, the choice of the zone of principal attack will always be a function of the mean at our disposal and the terrain, but we can sometimes bring into our choice the fact of the existence of weak points of the enemy.

III - MEASURING OUT OF EFFORT DURING THE COURSE OF COMBAT

The third element of the plan of maneuver is, we have said, the measuring out of effort during the battle; or, expressing it in less abstract terms, the proportion to be established, at different periods of the action, between the troops engaged and the troops in reserve.

This question was gone into at great length in Part Two; it will be sufficient for us, here, to call the conclusions to mind.

OFFENSIVE AGAINST AN ENEMY IN POSITION

We have seen that the evolution of combat against an enemy in position could be divided into a certain number of phases which are:

the approach;
the gaining of contact and the engagement;
the attack preparations;
the attack, or attacks, intended to break the enemy resistanc
the exploitation;
the pursuit.

We have noted that in a Corps, for example, the engagement of forces followed a double progression, increasing at first, then decreasing and comprising:

the action of the advance guards for gaining contact;
the partial engagement of the front line divisions to verify the value of the contact, push back the enemy covering dispositio and assure ourselves of a favorable base of attack;
the entrance into action of all the forces of the Corps for the attack of the principal position;

a first reduction of the effectives in first line in the course of the period of exploitation;

a second reduction of these effectives in passing to the pursuit.

And finally, we have noted that the effective strength of the units to be put in first line increases and decreases, in proportion as the value of the contact offered by the enemy augments or diminishes.

DEFENSIVE

In the defensive, we have seen that from the point of view of distribution of forces, combat could be divided into three principal phases:

the fight on the outpost position;
the fight on the principal position of resistance;
and, eventually, the fight in rear of the position of resistance;

The first phase is exclusively the business of the outpost troops.

In the second phase, all the forces must be employed for the defense of the principal position; but their entrance into action may be progressive. First, we must devote sufficient troops to the position of resistance to assure a good defense. What is left over forms the reserves at the disposal of the commander for taking care of the incidents of combat.

Finally, in the third phase, if we have received the order to fall back, the operation is effected by the withdrawal of the main bodies in rear of positions held by the rear guards, whidh then play a part similar to that of the outposts in the first phase.

Here again, the strength of the units put into first line passes through a maximum that corresponds to the defense of the principal position of resistance, and we may state that the distribution of forces is a function of the value of the contact we wish to offer to the enemy.

OFFENSIVE AGAINST AN ENEMY IN MOVEMENT

The offensive against an enemy that is also attacking is a form of mixed combat that employs, successively or simultaneously, the procedures of the attack and the defense. Here, the problem no longer offers the same character of simplicity as in the preceding cases.

It presents itself in a very different manner, depending on the degree of initiative left to the commander; or, in other words, depending on whether the commander has to conduct a simple action, exclusively offensive or defensive, or whether he must, himself, combine a series of offensive and defensive acts. This distinction is important, for it enters into play whatever be the echelon at which we are operating.

In the first hypothesis, the commander is not master of the choice between the offensive and the defensive. His attitude is forced on him: he must attack, or defend himself. His case is one of the precedingly mentioned, due regard being paid to the special conditions attendant upon an engagement against an enemy in movement.

Under the second hypothesis, the commander may change his attitude at will and pass from the offensive to the defensive and vice-versa, either on a part or along the whole of his front. In this case-- and again, whatever the echelon considered--the commander has to contrive a real maneuver, and the putting of his forces into action will depend, as we shall see later, on the maneuver procedure he shall choose.

IV - CONCLUSIONS

In the course of the preceding discussion we have noted that:

-- combinations of directions are functions of:

the form of the enemy front, the form it has or the form we propose to give it;

the degree in which the terrain is compartmented .

Opportunities for combinations of directions are more frequent in front of an enemy who is attacking than in front of an enemy in position.

-- the choice of the zone of principal effort is function of:

the facilities for combinations of directions given by the terrain.

the existence of weak points of the enemy.

-- As to the distribution of our forces between first line units and reserves, it is function of:

in the offensive against an adversary in position: the value of the contact offered by the enemy;

in the defensive: the degree of resistance we wish to oppose to the enemy;

in the offensive against an enemy in movement: the maneuver procedure chosen.

Such are the three elementary combinations, the synthesis of which, under the conditions particular to each special case, will constitute the plan of maneuver. We now have to see how we can mak this synthesis and how we can connect it up with a single directi idea.

CHAPTER III

IDEAS ON DECISIVE ACTION AND UNITY OF COMBAT

We have seen that the Commander must "maintain the broad lines of his plan of maneuver in adapting its particular conditions to circumstances."

To maitain the broad lines of a plan presupposes that real unity can be effected in the maneuver and that this maneuver is a coherent whole, oriented, from the beginning, toward a final goal.

Several theories exist on maneuver.

Divergences among the systems generally have as origin a difference in the estimation of the value of the factors that influence the decision of combat. In other words, at the base of each is found a special theory on the nature of the decisive action.

For the greater number of the writers on Napoleon, the battle divides itself into two acts; a preparation, having the object of wearing out the enemy, made with as great economy of means as possible; then an act of force, due to the intervention in the fight of fresh troops reserved until that moment. It is this act of force which constitutes the decisive act of the battle, "the issue".

In the opinion of another school, there is no particularly important issue in a battle. The battle is an ensemble of separate combats, the sum of which produces success.

It is undeniable that, depending on whether we adopt one system or the other, we shall end up with entirely different conceptions of the conduct of combat.

FIRST SYSTEM -- PREPARATORY COMBAT AND DECISIVE ATTACK.

This first system, based on the experiences of both the wars of the First Empire and the war of 1870, finds its clearest expression in the decree of May 28th, 1895, on the service of armies in the Field. This regulation, of course, is out of date, but it is a part of history. We should not forget that, for us, it had the force of law for twenty years, and that it was the pocket companion of the generation of officers that led our armies to victory. Wittingly or not, it frequently inspired their decisions, not only decisions regarding maneuver, but decisions regarding organization.

Here is what it says:

"Once engaged, the combat will generally present three principal phases: the preparation, the decisive action, the completion-- from which naturally results the distribution of forces, the principle governing which may be summed up as follows:

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"At all points where the enemy shows troops oppose him with the minimum of forces necessary to contain him, to immobilize him, and to wear him out by holding him at every moment under the threat of a decisive crisis; this is the preparatory combat."

"Reserve a part of the forces to produce a violent and concentrated effort on the decisive point. This is the principal act of the struggle, the decisive attack."

"Hold out a reserve carefully kept away from the emotions of the fight until the final solution of the matter, in order to complete the success or limit insuccess; pursuit to the limit, or reestablishing of order."

"These phases do not always have the same relative importance; sometimes the preparation will be short and energetic, for example, when we shall find ourselves able to crush enemy troops by surprise, to fall upon the wing, or the flank, of the adversary, with superior forces ...... sometimes, on the contrary, the two adversaries closely assembled, will come to grips with all their forces and then the preparatory combat will take on full development."

At first glance, this theory appears simple. However, it has shown itself to be difficult enough to put into practice and this is due, it appears to us, to the fact that the regulation has tried to push too far the application of this analysis of combat.

Let us take up the principal points of the line of reasoning followed.

"Combat" states the regulation" always has as object breaking the will of the adversary by force and imposing on him our own will." But how are we going to impose our will on the adversary? In combat of ancient times, in the school of Napoleon, of Clausewitz, in the modern German school, the object of combat is to destroy the enemy. "I do not want a single man of that army to escape" said Napoleon frequently, and when he fought a battle his object was always not to defeat his adversary and push him back several miles but to destroy him or capture all his troops.

Clearly, the French regulation of 1895 is less ambitiou Under the influence, perhaps, of this idea that victory is above all a matter of morale, it does not seem to aim beyond a moral result. It hopes to obtain this morale result not from the total annihilation of the enemy but from the destruction of a part of his forces.

"To vanquish the enemy, it is not necessary to successively annihilate all of his elements. The sudden destruction of a part of his forces, at the right moment, will generally be sufficient to break his will."

We have reached the point where the line of reasoning forks. Destruction of a part of the enemy forces is presented to us here, not as a means of arriving at total

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destruction, but as a final objective; as an object that is sufficient in itself. Once we start along this path we are easily led farther.

"To be the strongest at the right point at the right moment, such seems to be the secret of success."

Thus, the idea of destruction is minimized to the limit. Destruction of the enemy forces still included a certain amount of space and a certain duration of time. At the degree at which we have arrived, space reduces to a point and duration to a moment.

In a parallel manner, the idea of decisive action has dropped down a degree. It has become the decisive attack which is but a "derivative" of the decisive action. Just as the properties of the action of total destruction have been transferred over to the action of partial destruction, so the properties of a broad decisive action are transferred to the decisive attack itself; and this latter is no longer only an act of the decisive period, it itself becomes the decisive period. After the decisive attack, the battle is finished and we have only to complete the success:

"Reserve a part of the forces to produce a violent and concentrated effort on the decisive point; this is the principal act of the struggle, the decisive attack;

Keep out a reserve to complete the success -- pursuit to the limit."

Unfortunately, at the same time that the question appears to simplify itself, the problem put up to the commander grows beyond all limits. For there is a reservation to the possibility of obtaining success by decisive attack. This attack must strike at the right point and at the right moment. Although certain people seem to have thought so, it is very evident that this does not mean any point and any moment whatsoever selected by the commander; it does mean a point and a moment so chosen in the general battle situation that the effort made on this point, at this time, -- if it succeeds -- will definitely break the will of the enemy.

By what signs shall we recognize this point and this moment? Here the regulation ceases to be explicit." For the commander, the choice of this point results either from indications given by combat itself or from circumstances that have enabled him to decide in advance." (1) That is all. It is acknowledged, moreover, that errors are possible. "The preparation troops may even secure the final success if we have not succeeded in settling the affair at the point where we had expected to do so."

From all this preceding matter, we see that we inevitably get into a blind alley if we try to push analysis to the very limit. The mind, except under unusual circumstances, cannot seize this residue of a conception of point and moment. As a matter of fact, what most often happens when we wish to put this method into practice?

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(1) We see that this Regulation willingly accepts the idea of preconceived maneuver. But in practice, this solution does not prevail.

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12-16-24

Since the attacked calledthe decisive attack is the most important act of the battle, we cannot prepare it too carefully.

First,we must reserve sufficient means to give this attack sufficient strength to produce the expected effect. We shall, then, commence by setting aside the forces necessary to execute it. The stronger these reserves are, the greater will be the result of their action. Consequently we must economize as much as possible on what is not intended to be used in the decisive attack, and since the defensive is more economical than the offensive, we will, at first, content ourselves with parrying, and we shall abandon -- at the beginning at least -- initiative in the conduct of the attack.

This initiative, we tell ourselves, we shall seize by and by. But since the point and the moment of the attack have so much importance, we cannot choose them too carefully. How are we to discover them? A matter of information. Let us, then, reserve our decision until we are more fully informed. So, it is not in himself, not in the known situation that the commander finds the elements of his essential decision, that upon which he counts to obtain success; it is in the events and the information that are to come. But shall we ever be able to settle on anything definite? An opportunity appears; is it not too transitory to give us the time necessary to seize it? Should we not wait for a better opportunity? Thus, time passes, we jockey and hesitate, and end by letting things drift and making no decision.

This is very evidently the weak side of the method and it is at this side that it lends itself to criticism.

SECOND SYSTEM -- THE IMMEDIATE GENERAL ATTACK.

In view of these disadvantages, which, if they did not result perhaps directly from the doctrine, at least resulted from the manner in which it was applied, we are not surprised that we have seen rise up, in the face of the regulation of 1895, a different proposition.

This proposition (frequently called the German doctrine, before the war) had been practised and taught in France by General Kessler since 1902. It was again taken up nearly in entirety by Colonel de Grandmaison in the conferences we have already spoken about in connection with security.

Colonel de Grandmaison does not believe in the possibility of again seizing the initiative once it has been abandoned.

"In practice, as soon as we have lost our position (position is used here as in "position of a boxer or fencer" -- Tr.) and are obliged to submit to the initiative of the enemy, any attempt to regrasp the initiative is extremely difficult......"

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12-16-24

"In nearly every case, he who submits to the will of the adversary rapidly becomes inert and will be defeated ......"

"In reality, we do not attack; after a thousand precautions, we counterattack and that is the offensive-defensive, or, if you prefer, the aggressive defensive-- and one is just as good as the other for being defeated."

So, the only way to get out of this is to take the offensive from the beginning. This obliges us to immediately put in line the greater part of our means.

In this way the essential decision of the command will be made at the beginning of the battle, instead of being put off to the end as in the preceding system. No more hesitations, no more jockeying possible.

In addition, in proportion as we ascend in the military hierarchy, the idea of maneuver must change; it cannot be the same for a large unit as for a small one.

"To command is to foresee". In the large units, "the principal mission of the command is to prepare the battle and not to conduct it on the terrain (1) .... Unity of battle can be attained only through having small, independent units aim at the same goal."

Thus, the great decision will be taken from the beginning.

"No longer can we await the result of an engagement combat before disposing the ensemble of our forces. It will be necessary to act upon given quantities that are much more vague and uncertain than in former times."

"We will come to grips with the enemy on a front enlarged in advance, a length of front close to that allowed by our strength. Our gaining of contact will be made in the shape of the simultaneous engagement of several columns. Moreover, it will not be mere tickling by scattered-out advance guard; it is a regular attack that we must make, using the main bodies."

"The distribution and the use of the main bodies of the forces will be decided, in their ensemble, at the moment of the engagement."

Evidently "this decision admits of considerable risk, for, in order to be ready to attack quickly and powerfully, it is necessary to gain contact on a wide front.... This does not mean to say that the commander, in advance, deprives himself of all means of intervening; but he does not hold out his main bodies -- he holds out reserves.

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(1) In the main, Colonel de Grandmaison accepts the German thesis which he summed up, in the first place, in the following terms: Battle thus conceived, once it is engaged, can no longer be conducted; the task of the higher command lies entirely in the preparation. It (the higher command-- Tr.) must make a positive solution in advance -- this being the means of avoiding being led by events.

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12-16-24

We do not maneuver with our main bodies, we maneuver with what we can economize, with reserves."

"We must have these reserves:

In order to oppose outflanking movements of the enemy;

In order to reinforce and renew our offensives at certain points."

But "here again we must understand one another. Contrary to a too-frequently held conception, the reserves are not something put aside for a rainy day, something in hand ready for all jobs."

In a large unit, the use of troops held in reserve will be largely pre-conceived. It is a new risk we shall have to run. They are made to be used, in cooperating in the attack to the last man, if it be necessary......".

We shall not follow Colonel de Grandmaison in his exposé of the rules which he gives for the practical realization of the maneuver as he conceives it. These rules have chiefly as object the enabling of the command to arrange its march dispositions before the engagement so that things will not go wrong.

We have, above all, wished to bring out in relief the principal characteristics of the system, to wit:

The assumption that the battle cannot be conducted on the terrain by the commander;

The obligation for the commander to make his essential decision before the battle;

The principal act of the battle consisting in the simultaneous engaging of the greater part of the forces on a front proportionate to their strength and, at all events, very close to their combat front.

We can now put in parallel the principal features of each thesis:

1st - The battle must be conducted.	1st - The battle cannot be conducted on the terrain.
2d - The decision is generally made in advance.	2d - The decision is always made in advance.
3d - The engagement of the forces is gradual. It comprises a period of preparation and a period of decisive action.	3d - The engagement of the forces is sudden and its broad lines are irrevocably fixed from the beginning. After that there can be only changes in details.

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12-16-24

The fact that these two theories are each the antithesis of the other is an indication to us that they do not exhaust the solutions of the problem. To note this, it is necessary to very carefully study the ideas on the subject of decisive moments and decisive points.

MATERIAL ACTION AND MORALE ACTION.

We have already stated that for the combatant of ancient wars, for Napoleon, combat had as object the complete destruction of the adversary. We readily admit that it is not necessary to go as far as that, and that morale destruction is sufficient. To sustain the contrary would be denying history.

But can we effect morale destruction without willing material destruction and for effecting that have we more certain means than material means?

Putting the question in this way is not denying the value of the morale effect; it is simply asking ourselves how we can produce it.

If we attempt to note the factors that enter into play to produce this demoralization, we very quickly note, that, of these factors, some are completely independent of us while the others are a direct function of the material action.

The most characteristic type of morale action is the effect of surprise which multiplies the material result obtained in proportions which are sometimes enormous. We have ourselves brought this out into relief in studying the repercussions of the counterattack. But we have also brought out that, for a given cause, the results may be very different. Recruits surprised by a burst of fire run away, crying treason. Under similar conditions, the French troops of 1870 at Wissembourg and at Saint-Privat tranquilly take arms and move off to their combat positions. The variation in result shows us that the effect of surprise is proportional not only to the menace of material destruction in surprise but also to the previous state of morale of those who are surprised-- a state which does not depend on us. In extreme cases, where a very weak menace of destruction suffices to produce a panic, we may say that surprise only exploits a prior situation of morale. It ascertains demoralization quite as much as it produces it. It is the spark that can explode a barrel of powder but which produces no effect if it falls on a less unstable composition (1).

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(1) Of course, we have in view here only the purely moral effect of surprise. In addition, surprise has the great advantage of placing the adversary in a situation in which he is not able to act with all his means. But this is a material result, not a morale result.

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12-16-24

What is true for the highest degrees of the morale effect seems also to be true for the lower degrees constituted by the phenomen of attrition, which is also a combination of material action and morale action.

Material action is multiplied in fact, by the duration of the period of action. A relatively feeble but continuous action, in the end, produces on the troops subject to it, fatigue and nervousness, which finally bring about real depression of morale and which ultimately become intolerable. The result will be more or less rapidly obtained depending on the strength in morale of the patient. But this strength of morale does not depend on us. We have at our disposition only quantity and continuity of the material effect.

Not only does the morale factor escape us, but also what is purely morale in the effect produced is never definitely known to us. And if this result is not crowned by material destruction, everything may have to be started over again. The nerves calm down and double confidence is born of the disgrace of having given way before an imaginary danger. Nothing is irrevocable except material results: capture of a piece of ground, losses inflicted on the enemy, taking of prisoners, etc.....

"The great superiority of the Roman tactics lay in always seeking to place physical action on a level with morale action. Morale action wears itself out (we end by perceiving that the enemy is not so terrible as he appears to be); but physical action does not wear out. The Greeks tried to overawe. As for the Romans, they wanted to kill and they killed...... they were on the right track. Their morale action is supported by strong swords that kill." (ARDANT DU PICQ)

We can still subscribe to this conclusion of ARDANT DU PICQ; we can demoralize the enemy only indirectly and our influence is exercised exclusively through the intermediary of material agents. We should not ignore, of course, the fact that surprise multiplies the material effect and without doubt we seek surprise for its morale effect, but above all do we seek it because it permits us to destroy more easily and more completely. We should not ignore the fact that a material action, even a weak one, provid ed it be continuous, wears out and tends to break up the morale of the enemy, and we employ this procedure when we need it, but we

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12-17-24

count chiefly on the material destruction it effects. We shall use the morale effect when it will be produced in our favor; but, because it is uncertain and unstable we shall act as if it were not to occur and as if we should have in view the total destruction of the enemy.

To reason in this manner is not to deny the morale effect. It is simply putting ourselves on guard against the use of so-called morale means, which, in fact, rest only on under-estimation of the morale of the adversary.

"These erroneous considerations will frequently reappear in your decisions without your suspecting it. It is these that will provoke our criticisms when you will undertake operations against the flank or rear of the enemy, claiming that the entire value of these operations resides in the directions in which they are made."

"When you undertake to make threats without attacking....."

"We do not cause a real adversary to fall back by a cleverly chosen direction; we cannot immobilize him without an effective attack......"

"The(type of -- Tr.) war that we shall study, positive in its nature, admits of only positive solutions. No effect without cause. If you desire the effect, develop the cause, apply force."

"If you wish to force the enemy back, beat him, nothing can be done without that....." (Marshal Foch, the Principles of War).

Consequently then, when we say that battle has demoralization of the enemy as its object, we must be careful not to become the dupe of words; we merely note what will probably happen -- that the battle will cease when the enemy admits himself vanquished. But as no one can foresee in advance under what conditions or when this result will be obtained, the commander is obliged to organize his affair as if he would be obliged to push things through to the bitter end, i.e., aim at total destruction of the enemy. "Nothing is done as long as there remains something to do" (Napoleon).

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12-17-24

THE DECISIVE POINT AND THE DECISIVE MOMENT.

We now have to ask ourselves if, in a battle, there really is a decisive point, a decisive moment and, if so, how this point and this moment can be foreseen or, at least, perceived.

As to the first question, there is no possible doubt. That there is, in every battle a decisive moment, that is to say, a moment beginning with which the balance swings decidedly to one side is a fact of experience, one that cannot be contested. It is necessary that this moment be produced, for without it, by very definition, the battle would remain indecisive. Therefore there is a decisive moment and if an important act has been accomplished at this moment, the point at which it occurred is, evidently, a decisive point.

As for the decisive moment, we cannot conceive it to be aught else than the resultant of the moments that preceded it. Taken singly, it has no more value than any one whatsoever of the others. Suppress -- in our mind -- one of the events that occurred before it, and the decisive moment will be moved. If, at Sadowa, the German First Army had not obliged the greater part of the Austrian Army to face toward it, the arrival of the German Second Army would not have produced the decision under the same conditions. A similar line of reasoning might be applied to the intervention of the 1st Corps at Guise. We may indeed believe, though we cannot prove it, that the decision would have been produced just the same, but the decisive moment would not have been the same. And when the act that we may consider as decisive reduces to a simple incident, say the capturing of a crest by one or two companies, as at Nanshan, or a distant flank fire action as at Wa Fan Gou or at Yang Tze Ling, is it not evident that this incident derives all of its value from the general situation in which it is produced and, consequently, from the events that have preceded it.

So, the decisive moment is not independent of its antecedents; no more so is it of its consequences.

Again, let us suppose that a battle is stopped at the precise moment we consider decisive, as for example, Austerlitz at the moment of the capture of the Pratzen plateau, Castiglione Bautzen and Sadowa at the moment of the entrance into line of Serurier, of Ney and of the Prince Royal. Nothing prevents the vanquished from retiring in complete liberty. No more victory, no more decision, no more decisive moment. We can distinguish the decisive moment only after the event, when we can see the whole battle, the events that have followed this moment as well as those that have preceded it.

To sum up, it is certain that there is a decisive moment, but this moment results from the antecedents of combat. For that reason, we have only an indirect grasp on it; it is illusory to try to indefinitely reduce these antecedents for its profit because, finally, it will be necessary for it to pay for all the savings made for its profit. On the other hand, we will know it (the decisive moment -- Tr.) only after the combat is terminated and again is it illusory to attempt to delay acting until the decisive moment reveals itself to us.

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12-16-24

We could reason in the same manner on the subject of the decisive point. This point is not decisive of itself. It has become so only through its situation in the ensemble, through what has been effected on the other points of the battlefield. Change the events upon any other point whatsoever, and you are quite certain to change the decisive point.

From this fact that the commander cannot act directly on the decisive point at the decisive moment are we to conclude that he cannot act indirectly, that all maneuver is impossible? We do not think so.

Take, for example, (Sketch No 65) the situation of the battle of Saint-Privat at about 7:00 PM. We see the German Army spread out in front of the French Army on a front of twelve and one-half miles. Near Saint-Privat, a German division has stopped in front of the right of the French VI Corps, and another division, the 12th Saxon, executes a flank attack against this right (right of the French VIth Corps -- Tr.).

We know that the attack of this division decided the fate of the battle; here then, certainly, is a decisive point and a decisive moment.

How did this come to pass?

Has Marshal von Moltke himself chosen this point and this moment? Not at all.

What has he attempted to do? He wished to attack the French Army by enveloping it on the north and he has boldly put into action all the forces necessary to feed his enveloping movement. And he has profited by taking a broad view of the matter. We recall, in fact, that the German high command first believed the French right at Amanvillers, then at Saint-Privat and that it was only a third lot of information that showed it to be at Roncourt. Under these conditions what result would have been given by a plan of attack based on the first lot of information? Probably nothing. But the maneuver was arranged in so supple a way that these errors were of no importance. In fact, merely opening the sheaf of (German -- Tr.). Corps was sufficient to enlarge the front of attack so as to insure the desired envelopment.

Thus, what was willed, contrived by the Commander is not a decisive wing attack upon Saint-Privat, but a maneuver of the whole force, the normal evolution of which was to be an attack on the French right, wherever this right might be found. Thus there was a decisive point and a decisive moment; but it is not this point and this moment that the action of the commander was exercised upon.

MANEUVER ARRANGED IN ADVANCE.

So, the fact that the commander cannot always himself choose the decisive point and moment does not prevent him from trying for success along a given path and following a determined maneuver procedure.

We may, then, conceive of a system which will be a combination of the two theses set forth previously and which is, moreover, implicitly expressed in the 1895 regulation when this regulation alludes to the circumstances that will allow the commander to decide in advance.

To bring this out, let us take a very simple example, the well-known case of Castiglione. This battle comprises (See Commandant Colin's work: Les Transformations de la Guerre): (Sketch No 66).

-- a frontal combat by Augereau's and Massena's divisions to force the enemy to engage all his troops;

-- an attack in the Austrian flank by Serurier's division, at first kept twenty-two miles from the battlefield;

-- and when the enemy has disorganized his order of battl to face the flank attack, an attack to the limit by all available troops.

Here we see very clearly that the battle, in its entirety, is conceived from the beginning. Serurier's attack, which we may consider as the decisive attack, was not contrived after having seen the results of a preparatory combat; it was decided upon at the same time as the preparatory combat itself.

Here we are in presence of a preconceived plan as demanded by Colonel de Grandmaison. But, at the same time, this plan does not comprise simply a general and simultaneous engagement of the forces, after which the conduct of combat will be abandoned to subordinate commanders. It contemplates a maneuver of the type described by the 1895 regulation, comprising:

-- a preparatory action, frontal combat by Massena and Angereau;

-- and a decisive action, Serurier's intervention at the enemy's flank.

The decisive point and decisive moment no doubt exist, but they might have been different. They do not constitute the essential part of the plan; they become simply a circumstance of execution. The Commander has not allowed himself to become hypnotized by these details; he had the ensemble of his combat constantly in view and it is on this ensemble that he exercised his action.

That this was a habit of Napoleon's is well enough demonstrated to convince us in the pages that Commandant Colin devot to him in the work already mentioned:

"It is useless to multiply examples; we would note, each time, that Napoleon started battle with a premeditated plan ......(1).

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(1) Commandant Colin adds: "nearly always conceived followin the same type"...... but we believe we should make a reservation on this latter statement.

/imdr
12-16-24

It is true "that circumstances rarely permitted him to follow the execution of his plan to the end....:.. But the fact that modifications, and sometimes even a change of plan may be forced on him during the course of execution never decided him to engage without an initial plan covering the whole of the development of the battle."

We shall note, in addition, that the fact of coming to grips with the enemy after a determinate plan deeply modifies the character of the preparatory combat and enables us to give it a precise object, which, of necessity, will be wanting when we wait for the suggestion of a maneuver idea to flow out of this combat. To build up a decisive action of some sort upon a preparatory combat of some sort is not the idea. The general mode of decisive action being predetermined, what should be done is to create a favorable situation which will allow this action to develop itself under the best conditions and with the greatest possible results. To accomplish this, all the efforts must be oriented, from the beginning, toward a common goal; we guarantee ourselves against the risk of diverging efforts and bring to our side the best chances of success.

CONCLUSION.

For this third system, moreover, we do not claim the spirit of exclusion which, we think, we must refuse to the two others. There are maneuver procedures as there are combat procedures. In the ensemble of circumstances we find in war, each system, each procedure may render service some day, on condition that it be used in the general situation to which it is more particularly adapted.

Although the latter system, in our opinion, is the easiest to handle and the one that lends itself to the greatest number of applications, the two others have also found their use in the past and will doubtless again find their use in the future. Consequently it is inadvisable to set them aside in advance; only we must study very closely the conditions under which they may be used so as not to employ them at the wrong time. This is what we shall try to do in the following chapters when we take up the two great categories into which the different forms of maneuver are classified: wing maneuvers and central maneuvers.

SYSTEM OF SUCCESSIVE ACTIONS "ECONOMY OF FORCES".

In order to clearly place the problem we intend to study, it is necessary to point out that up to the present we have reasoned as if success could be obtained through a single maneuver.

That may happen, but the reality is usually more complex. To attain the result, it may be necessary to effect, not a single maneuver, but a series of successive maneuvers.

History, moreover, shows us brilliant series of operations in which the decision results not from a single act, but from a series of vigorous, closely successive blows, struck until the final result was obtained.

The value of this system does not lie, properly speaking, in the succession of efforts, but it does lie in the manner in which this succession of efforts is effected. It has been set forth by Marshal Foch in his "The Principles of War". (Second conference: Economy of Forces).

"The principle of the economy of forces is the art of throwing in, at a certain moment, all our resources on a certain point, by applying, there, all our forces; to make the thing possible, have these forces intercommunicate instead of working each in its separate bailiwick and being assigned a fixed and invariable destination; then, the result obtained, to again converge these forces and act against a single, new objective."

"It is the art of bearing with all our strength, in succession, on all the resistances we encounter and, to be able to do this, arranging our strength into a system."

As an example, the Marshal takes up the campaign of Montenotte in 1796, and brings out a conversation between Bonaparte and Moreau in 1799:

"You are right", said Bonaparte, "it is always the large number that beats the small number."

"However, General, you have often beaten large armies with small armies", I replied to Bonaparte.

"In that case also", he said "it is always the small number that was beaten by the large number."

Which is what led him to set forth his tactics as follows:

"When I, with smaller forces, was in presence of a large army, I rapidly grouped mine and, falling upon one of his wings like a thunderbolt, crushed it back. Then, I profited by the disorder which this maneuver never failed to create in the enemy's army, to attack another part of it, still using all my forces. Thus, I beat the enemy in detail, and the victory which was the result of this (beating in detail -- Tr. was always, as you see, the triumph of the large number over the smaller number."

We can easily recognize the same conception in the instructions given by General Foch, just before the battle of the Somme.

And finally, the campaign of 1918, particularly during the period included between July 15th and September 25th, constitutes a new and magnificent demonstration of the value of this system.

From the point of view that interests us, this system has two classes of application.

First, we are obliged to use it in the elementary combinations and we have already explained this in discussing the principal attack. We have seen that it dominated the entire execution of combat and we shall be obliged to use it at every moment in the applications of maneuver to modern warfare. For it must be thoroughly understood that when we study a maneuver idea, we must always have in view not only the idea itself, but also its adaptation to the existing contingencies.

/imdr
12-16-24

But the system goes farther. It is also a method for the purpose of regulating the binding together and the combining of a series of maneuvers having a particular object. In this case, it constitutes a higher phase in the study of maneuver and it can be commenced profitably only after an explanation of the elementary procedures.

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12-16-24

CHAPTER IV

WING MANEUVERS

The war of continuous fronts has turned our attention more or less from wing maneuvers. We have had to take care of things as they came along and we have limited ourselves to studying the problem of the hour.

But, since, the Instruction on the conduct of large units has reminded us that we must be able to wage war on non-continuous fronts, and, under those conditions wing maneuvers are possible.

Then, we have previously seen that a war on extended fronts frequently permitted combinations derived, in reality, from wing maneuvers. They are, in a way, wing maneuvers made under semi-free conditions-- which conditions render their execution more delicate, but which do not modify their characteristics.

In addition , on an extended field of battle, the fronts often are only relatively continuous. They may be continuous for a large unit, for an Army, without being so for its advanced elements. Now, any interruption of a front , however slight it may be, may open up a possibility of wing maneuver to a given echelon. Such opportunities frequently offer themselves, even to small units of cavalry and infantry, particularly in gaining contact and in the pursuit.

Finally, it is necessary that all unit commanders taking part in the execution of a maneuver inform themselves of their role in the ensemble of this maneuver, so as to be able to orient the initiatives they will have to take in a sense conforming with the idea of the command.

Today, therefore, we cannot neglect study of the wing maneuver and we may even affirm that knowledge and practice of this maneuver is necessary at all echelons.

For the sake of simplicity and in order to make use of known actions, we shall most often refer to examples involving units of a slightly large order. But it must be thoroughly understood that, mutandis mutatis (the necessary changes being made -- Tr.) the rules apply to the small units as well as to the large ones.

FUNDAMENTAL CHARACTERISTICS OF THE WING MANEUVER

What above all characterises the wing maneuver is that it is a combination of two directions of attack.

It sometimes happens that in studying , we limit ourselves to studying the action along a single direction-- that leading to the flank of the enemy. Such work is useful but only on condition of remembering that when we do this, what we are really studying is not a wing maneuver, but a frontal attack made under special conditions.

As we have shown in the preceding chapter, there is a close connection among all the acts that constitute a maneuver. Particularly in the wing maneuver is there a repercussion of the frontal attack on the flank attack and vice-versa. Consequently, what characterises a given wing maneuver and what will enable us to differentiate the different types is the proportion that exists between the forces in the frontal attack and the wing attack.

Combining this point of view with the different systems of maneuver described in the preceding chapter, we can classify wing maneuvers into four principal groups (Sketch No. 85)

1st -- Converging attack;

2d -- Frontal attack combined with a weak flank attack (enveloping movement);

3d --- Frontal attack combined with a strong flank attack;

4th -- Weak frontal attack combined with a very strong flank attack (flank attack).

METHOD OF STUDY

Again it must be understood that we do not seek to establish the superiority of one system over another. We simply endeavor to see the properties of each and to note their conditions of execution.

A complete study of this subject would be beyond the scope of this course. Therefore we shall limit ourselves to its broad lines. But it is advisable that each one of us inform ourselves individually to as full an extent as possible. From this point of view, nothing can take the place of deep study of military history.

When the wing maneuver is made by a unit that has another unit abreast of it one one side, the maneuver is often hampered in its development either by adjacent troops or by the presence of enemy echelons. We shall again meet with these difficulties in studying central maneuvers; for the time being we shall limit ourselves to studying the wing maneuver in a space assumed to be completely free.

Also, though it is rarely that we can follow out to the end the execution of a determined typo cf maneuver and though, in a real operation, it is sometimes necessary to abandon a maneuver that has been commenced and start another one, we shall commence by studying each procedure by itself, and as if it were practicable to apply it without modification from start to finish. The question of variants of the initial plan will be taken up later.

This method, in fact, is the only one that enables us to bring out the closely bound relation that exist between the different acts of the maneuver and, particularly, between the decisive act itself and the dispositions that prepare this decisive act.

Finally, we shall not lose sight of what we have said on the subject of unity of combat and of the importance of finishing the battle. We usually consider the arrival on the enemy wing as the decisive event, in which we are right for it is at this moment, generally, that equilibrium is upset. But this is only on condition that we do not stop at that and that, once the blow is struck, we utilize its repercussions to their extreme limits.

CONVERGING ATTACK

In the converging (or concentric) attack we attempt to effect, right away, the complete surrounding of the enemy by the entrance into line of numerous columns concentrically oriented toward the battle field.

This system was considered as an ideal by the pre-war German regulations:

"The situation shows up as very favorable when, the day of the battle, the forces may be pushed toward the field of battle by starting from different points, and when operations have been conducted in such a manner that a short final march brings the troops, coming from various directions, against the front and the flank of the enemy." (1)

This corresponds with what was advocated by Colonel de Grandmaison, although the author does not make it an absolute rule:" Some would prefer (and the Germans attempt to realize it) that the engagement might be convergent. For an Army of several corps, the advisability of marching on a greater width of front than the combat front, so as to close toward one another for combat, is not to be doubted; below (a large Army--Tr.) it depends on the state of communications or circumstances, and sometimes on temperament".

By using this procedure, the commander practically abandons direction of combat as soon as he is engaged. The whole thing is a matter of long, prior preparation and preconceived decision; however, it is possible to vary the distribution of forces along the front and this is, consequently, conforming to the rules of attack of modern combat.

We may cite as examples:

Lutzen (1813) (Sketch No. 67);

Sedan, to which evidently refers the sentence of the German regulation previously mentioned;

The initial plan of the maneuver of le Mans (Sketch No.68);

The beginnings of the Tusco-Bulgarian campaign of 1913 (Sketch No. 70);

The ensemble of the maneuvers of the German right in 1914;

The first battle of the Marne and the battle of the Carmes gap (la Trouée de Charmes). (In these two battles, the offensive is preceded by a retreating maneuver in the course of which the disposition spreads itself out to take on the converging form preparatory to the attack).

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(1) Principles of the High Command (1910).

We can also note quite frequent examples of this maneuver in the wars of the Revolution, both on the French and the enemy side. (See Chapter V, following)

The principal difficulty in the application of the system lies in the fact that, the directions of march of the different columns being convergent, we must make no mistake concerning the position of the future battlefield. If not, we run the risk of finding ourselves, at the moment of the engagement, on a front of action that is either too wide or too narrow.

The theoretical parry for this maneuver is relatively easy. It consists of :

either an extension of the front at the moment of engaging-- the system advocated by General Kessler;

or, a moving of the battlefield; a procedure that was used by General Chanzy in the battles of le Mans (Sketch No 69). In this example, the directions originally given the German Corps had been: Saint-Mars-la-Briere, Ardenay and Parigne' - l' Eveque, initial front of the French army. But when they (the German Corps--Tr.) arrived in contact, Chanzy had completely evacuated his first battle field and had placed himself astraddle the Huisne. Consequently they had to abandon their first directions, reopen the sheaf and build up another maneuver.

The operation was possible because they had been informed in time, but when this system is applied without a corrective, as in the case of the German army at Spicheren, and when the adversary draws away, it may lead the assailant into a veritable block. We know what trouble the Germans had, on August 7th, 1870, in untangling the block caused by an exaggerated convergence of the Corps of the First and Second Armies on the battlefield.

The use of this procedure is chiefly in the realm of strategy; nevertheless, it finds applications at a lower echelon in the detailed execution of a wing attack.

As a matter of fact, troops, at the present day, seldom move except in a sheaf of columns (1) A march against the wing of an enemy will therefore often appear in the form of numerous columns directed concentrically toward the zone where we expect to find this wing. In this case, we naturally find ourselves in presence of all the difficulties of a converging attack, for we must:

be sure of including all the terrain occupied by this wing and its supports;

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(1) "Column", as used here, is taken in its broadest sense; it applies to marches on roads out of the presence of the enemy as well as to marched across country in proximity to the enemy.

Keep the sheaf sufficiently closed together so that the engagement may be made under suitable conditions as to extent of front;

provide for a new enlarging (of the front-- Tr.) in passing to the pursuit.

To sum up, the system of converging attack, conceived in advance, is suitable chiefly against an enemy that is immobile and gathered together on a narrow front. In this case, it usually gives completely decisive results. Its principal risks are either to miss the proper direction, or to run into a widened front, in which case the envelopment is not produced and the maneuver fails.

THE ENVELOPING MANEUVER

The principal difficulty in the application of the preceding system results from the fact that we are operating against an enemy that is not stationary.

If we desire to avoid this disadvantage, we will be led to consider the maneuver in two phases: a first, phase having as object the finding of the enemy and his immobilization when found; and a second phase consisting of bringing troops on his flank to envelop him.

If the troops charged with the flank attack are relatively weak and if they act in close liaison with the frontal attack it results in a type of maneuver usually called an enveloping maneuver.

The normal evolution of this maneuver comprises:

-- an attack made by the main body of the forces with the object of finding and fixing the enemy;

-- then the extending of a wing or of the two wings until we find the flank of the adversary;

-- a turning in on this flank;

-- and finally, exploitation of the crisis thus created.

As types of this maneuver, we may take Woerth, Saint-Privat, Lule' -Bourgas, Mukden. Saint-Privat, however, is incomplete, since there was no exploitation.

In order for this maneuver to be successful, we must succeed in locating the wing of the enemy.

If the enemy has reserves, he will generally use them to extend his front in proportion as we extend our own. It was this that was done on a large scale in 1914, at the time of the Race to the Sea. In this case the position of the wing changes at each instant. At first, this is only relatively disadvantageous if, as we have previously pointed out, the maneuver is not built up with respect to a given point. But if the movement does not cease, the time arrives when the reserves are exhausted by the extension of the front and finally nothing remains for the enveloping movement.

Therefore, extending our front is not sufficient; we must prevent the enemy from extending his and in order to do that we must succeed in making him engage his reserves.

Two cases are to be considered, depending upon whether the attitude of the enemy is defensive or offensive.

If the enemy holds himself on the defensive, we can fix him only by serious attacks, either all along the front as did the Germans at Saint-Privat or even on the wing opposite the one at which we shall try for the decision as did the Japanese at Mukden.

If, on the contrary, the enemy attacks, the preparation can be defensive and, consequently, more economical than in the preceding situation. It is probably this case that the regulations of 1895 had in view in its definition of preparatory combat: "Oppose to the enemy, at all points at which he shows troops, the minimum of strength necessary to stop him, immobilize him and wear him out x . . "

Thus, the attitude which it would be advisable for us to take in the preparatory combat, would be the converse of that taken by the enemy, and consequently it should be modified in proportion as the adversary changes his attitude.

Whatever the procedure used, we may say that the success of the maneuver lies rather in the results obtained by the preparatory combat than in the intervention of the troops charged with the wing attack. These troops, in fact, are not, and cannot be, very strong; consequently the attack will give results only in so far as the first part of the combat shall have succeeded in creating a general situation favorable to the projected maneuver.

In the application, two difficulties arise:

The troops charged with the enveloping movement must not be below a certain strength dictated by the normal depth of the enemy disposition at the wing to be attacked. We have seen in Part Two that on a modern battlefield, this depth may be from 3,300 to 4,400 yards; therefore we must have a unit strong enough to be able to attack vigorously on a front of 5,500 to 6,600 yards.

On the other hand, we have been obliged, from the beginning, to decide upon the front of the units to be engaged in the direct combat and, the greater part of the time, this front has to be calculated very closely, since we must attack the enemy so as to oblige him to engage his reserves. So, while we are fixing the enemy, we are at the same time fixing ourselves, and the initial front is no longer capable of being extended.

So it may happen that the maneuver will come to a dead stop if our foresight has not been sufficient. We know that we have come to such a point when we can extend our front only by drawing on the troops reserved for the enveloping movement.

We then have a choice between only two solutions.

Either the enemy does not attack and then we can profit by his immobility to rearrange the zones of action of the units engaged in the direct attack, reconstitute new reserves and move them toward the wing where we hope for the decision. This is the procedure which was used in the Race to the Sea.

Or else the enemy attacks. In this case, we can accept a preliminary investment of the wing concerned and then counterattack. This supposes a "defensive hook" (a refusal of a part of a line -- Tr.), a situation that has always been delicate and that is still more so in modern Armies on account of the range of converging fires. It is seldom acceptable, except under special conditions of terrain and when it has been prepared. We must not, however, set it aside in advance, for the war has shown us that it was possible to accept, at least during some time, situations that would have been unacceptable in the light of our pre-war ideas. The scheme of the system lies in utilizing masks of terrain calculated so that the elements facing in one direction cannot be reached by enfilade fires coming from the other direction. This is a problem the solution of which should be familiar to the infantry and, to a certain extent, to the Artillery.

In the combat of ancient times, the enveloping attack was intended to, and did, enter deeply into the enemy dispositions. Today it is more difficult, both on account of the special difficulties that accompany the welding of a wing attack -- difficulties we shall examine into at the end of this chapter -- and less necessary, on account of the great range of arms, which enables a flank position to make its action felt at a great distance. This action, naturally, is more extended as the terrain is less compartmented.

The decisive value proper of a simple enveloping movement is generally little enough. From this point of view, we should not be led astray by Saint-Privat. After the loss of Saint-Privat, the French Army could have withdrawn from the battlefield, and, if it had been in a normal strategic position, the battle, at that point, would be considered as an indecisive battle.

The effect of the enveloping movement is chiefly proportional to the quantity of enemy troops taken in flank and, in consequence, to the extent of the portion of the front exposed to the blows of the flank attack.

No doubt the enveloping movement will sometimes have the effect of bringing about the retreat of the enemy and in this case the battle will transform itself into a pursuit. But it also frequently happens that the immediate effect will be much less, and a period of lateral exploitation of greater or lesser length will be necessary before the pursuit.

The enveloping movement is the habitual maneuver of small units when they run into an enemy holding a non-continuous front. In these little operations we sometimes note a tendency to economize too much on the direct attack and to demand the entire result from the virtues of the enveloping movement itself. This is forgetting that the envelopment is efficacious only on condition of being a combination of two directions. So, it is not sufficient to attempt to slip in on the enemy's flank or rear, troops that are dharged with the mission of solving the problem by themselves alone; we must place the enemy in a real pair of pinchers if we don't wish to leave him too much chance of parrying.

From the nature of the enveloping movement and from the manner of conduct of the preparatory combat flow the dispositions preparatory to the engagement: the greater part of the troops oriented toward the enemy and having sufficient effectives to sustain the frontal combat; a quite strong reserve hidden behind the wing that is to make the enveloping movement and having enough troops to be able to determine the enemy wing and envelop it. We would be guilty of short-sightedness in playing for an envelopment on terrain which the first information (only-- Tr.) has indicated as being the limit of the enemy front (Battle of the Lisaine).

To sum up, the preparation and the completion play a very important role. The most favorable situation is that in which we find ourselves in presence of an immobile enemy, fixed in position along a narrow front. However, from the point of view of preparation, there is no disadvantage in having the enemy himself attack, on condition that we be ready to oppose to him the forces necessary to stop his advance.

FRONTAL ATTACK COMBINED WITH A FLANK ATTACK

In the preceding system, the principal difficulty to overcome results from the possibility the enemy has of indefinitely extending the wing that is threatened with envelopment.

This difficulty would cease to exist if the body of troops changed with the flank attack took its direction at a greater distance and entered the battlefield along that direction. Its intervention would thus aid in shortening the enemy front and creating, in a way, the (enemy--Tr.) wing sought.

Numerous battles have been delivered under these conditions.

To them Napoleon owes his finest successes and General Colin considers them the typical Napoleonic battles; Castiglione (Sketch No 66), Eylan (Sketch No. 26) and Bantzen (Sketch No. 7) are, in different degrees, typical examples.

We may also mention under this head:

The battles of Magenta and Sadowa;

Certain of Hindenburg's operations in Poland in 1914 and 1915;

The operations along the Metz in June of 1918 (Sketch No. 41)

In this type of battle, the putting into action of the forces is done in two phases:

A frontal combat delivered by the main part of the forces in order to obtain the deployment of the enemy and the commencement of his immobilization.

A flank attack starting some distance off, oriented, from the beginning toward his direction of action and intervening upon the flank of the enemy engaged in a frontal combat.

With respect to what we have called the converging attack, there is, as in that attack, a placing, at the beginning, of forces along their final direction (of attack-- Tr.) But, in addition, we see the factor of duration enter in: the engagement is not made simultaneously on front and flank; it is made successively.

With respect to the enveloping movement, the problem which lies in the finding of the enemy wing is suppressed on condition that the flank attack is made on a sufficiently broad front.

The procedure also admits as well of an offensive preparation (Bantzen, Sadowa) as of a defensive preparation (Hohenlinden, battle of Matz).

Two principal difficulties present themselves:

The first is to conceal for a sufficiently long time the movement of the troops charged with the flank attack, so that the enemy will not get scent of it. At all costs must we succeed in rendering this movement secret, either in concealing it behind cover as was done in the second battle of the Marne, or in operating with such speed that the enemy does not have time to parry. The use of truck transportation on a large scale (See Part Two, Chapter IX) enables us to attain this speed at the present day.

The second difficulty results from the fact that, of necessity, the maneuver is preconceived, and that the flank attack must be delivered as soon as it is unmasked. In this way, we are not certain that the preparatory combat will have had time to produce its complete effect.

On the other hand, we can calculate the moment at which the flank attack will be able to intervene and arrange, in function of this moment, the attitude and vigor of the frontal attack.

The decisive value of this maneuver lies, as in the case of the enveloping movement, in the degree to which the enemy reserves have been engaged. This result will be the more surely obtained as the frontal combat shall have been energetically conducted. So Colonel de Graninaison was able to maintain that "the real victors are those "who, at Magenta, passed the day in simply getting themselves killed at the Ponte Vecchio "of the Prussian VIth Corps who, on August 6th, struggled obstinately all the day in trying to debouch from the bottle-neck of Woerth under unfavorable conditions. . . (1)

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(1) Conference to the Army General Staff

Although these affirmations are intentionally misleading to some little extent, yet they well stress the energetic character the direct combat must take on if we desire that the battle "ripen" sufficiently to enable the flank attack to definitely effect the desired evolution of the combat.

Although able to produce more important results than a simple enveloping movement, the combined front and flank maneuver would give a no more decisive result if we arranged it at the moement of the forming of the square against the enemy wing. We have already shown previously that when Napoleon used this maneuver, the battle included a third phase, and that the moment of the entrance into line of the troops charged with the flank attack was the signal for a general attack made with all available means. In modern combat, this general action has as corollary the necessity of a quite rapid straightening out of the direction of the troops charged with the flank attack, as we shall see in studying the welding of the wing attack to the frontal attack.

The preliminary dispositions naturally include the division of the forces into two masses, one charged with the direct attack, the other charged with the flank attack; this latter placed far enough back from the wing to be able to engage itself by a direct march toward the battlefield. As this disposition in "offensive echelon" must inevitably attract the attention of the enemy it should habitually be effected only at the last moment.

The conditions of a general situation favorable to this maneuver are the same as those that we have brought out for the enveloping movement, to wit: an immobile enemy, a quite narrow front and a battlefield that has few compartments (1)

THE FLANK ATTACK

If we reverse the proportion indicated up to the present between the direct attack and the flank attack we shall have the flank maneuver proper.

It presupposes that we have been able to obtain a false deployment of the enemy, either in front of a weak part of our forces or even against empty space.

It is this procedure that made Frederick II's fortune in his battles of Praque and Leuthen. Its use, moreover, was not void of danger, as Frederick demonstrated at Rosbach and as he was able to note, himself, at Kolin.

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(1) Naturally, it would be advantageous if the terrain of approach to the battlefield were, on the contrary, compartmented on the side at which we to effect the envelopment.

Since Frederick, and for an isolated Army, the procedure rarely appears on the field of battle itself; we can, however, connect with it the battle of Wurzburg in 1796 and the maneuver of Ratisbonne in 1809.

On the other hand, it has taken on special importance in the domains of strategy.

Napoleon used it frequently. Sometimes he contented himself with a simple curtain to deceive his adversary; such are his entrances into campaign of 1800, 1805, 1806, 1815, as well as the plan of operations he attempts to suggest to Morean in 1800.

At other times, the flank attack is combined with the resistance of a strong detachment serving as a bait, as at the beginning of the maneuver of Eylan.

In January 1871, the Germans also effected a maneuver of this sort against our Army of the East (Sketch No. 72)

Finally, the procedure quite often finds its use in maneuvers on interior lines of which we shall speak farther on.

When this operation succeeds, it naturally opens a very grave crisis for the Army subjected to it. Usually, we can disengage ourselves only by a swiftly executed maneuver on interior lines. However, we must not forget that the procedure, even if it results in a battle with the fronts turned around, is only a preparation for battle. And this battle we must win, if not, the whole affair may have to be gone through with again: witness Valmy and Marengo.

It sometimes happens that a subordinate unit has the opportunity or receives the mission of attacking an enemy column in flank. At first sight, the operation seems simple enough to organize; but in reality, as we have to do with an enemy in march and completely free in his movements, it is very difficult to fix the initial direction of the attack. For the operation cannot be instantaneous. So, when we come to the engagement, we find a situation totally different from the one that existed at the start and he who thought to take his adversary in flank may be enveloped himself.

Such problems, presented themselves quite frequently during the Race to the Sea and doubtless will present themselves again in the future every time we shall attempt to oppose an enveloping movement by an extension of the front of combat. The situations that bring in this problem generally give us the hope of a possible "coup"; but it is generally illusory, for in this case the attack is made in only a single direction and the opportunity offered is too transitory for us to have the time to profit by it.

SECURITY OF THE ENVELOPING WING

There remain two problems for us to examine into, problems which we have spoken of several times: the security of the enveloping wing and the welding of the wing attack.

The enveloping wing acts more or less perpendicularly to the enemy front. Under these conditions it is itself exposed to being enveloped. The danger is the greater as the front of attack is smaller.

Security measures are indispensable, for the intervention of an enemy echelon, even of weak strength, might be sufficient to paralyze, at least momentarily, the development of the attack.

Therefore it is necessary to include in the strength of the troops charged with the attack, such troops as will be necessary to provide for its security.

This security naturally will require a quite large detachment, a fixed (stationary--Tr.) flank guard or an echelon. As we have seen in studying security, the strength of this detachment will depend on possibilities of intervention by the enemy. Consequently, if we put out information elements having a sufficient radius of activity, we may accept the risk of reducing its strength; but it is a matter of individual cases and in each case the problem must be laid out and discussed.

In particular, when the troops charged with making a flank movement follow a general direction parallel to that of adjacent troops, the first echelon elements must keep faced to the normal direction of the enemy; the change of direction can be made only by the units in second line.

The necessity of watching out for security often limits the reach that it is possible to give the wing attack, and, consequently, limits the results we may expect from it.

THE WELDING OF THE WING ATTACK

With short range arms and exclusive use of direct fire, the problem of welding the wing attack to the direct attack presented no serious difficulties. We of course had to avoid a too great accumulation of troops at the same point and then foresee the straightening out of the directions of attack. But that is a relatively simple problem.

But at the present day, we can no longer consider troops apart from the sheet of fire that they throw out in front of themselves and which can reach, as we have seen, several thousand of yards. Therefore it would be dangerous for the flank attack to penetrate, without taking precautions, into the zone of action of the direct attack, and the welding of the two attacks must be carefully prepared.

The principal points to be considered concern the zone of action, the direction and the front of the wing attack, its objective and the straightening out of its direction with a view to the exploitation.

1st --ZONE OF ACTION

The welding is made between two zones of action and not between two fronts as formerly. To accomplish it, two procedures may be employed.

The first procedure consists of limiting the depth of action of the direct attackqtroops to the vicinity of the angle formed by the two attacks;

The second consists of simply rearranging the zones of action, prolonging them so that they dod not run into each other and so that they run along side by side. Naturally, this requires a partial straightening out of the wing attack.

The greater part of the time, the two procedures are combined, the first being used for the troops placed toward the apex of the triangle, the second for the troops farther away from the apex.

2d --DIRECTION

On account of the difficulty resulting from the penetration of the zones of action, it is desirable to point the axis of the wing attack sufficiently in rear of the enemy front so that the impetus of this attack shall not be broken too soon. If it is pointed in too close, technical difficulties would mount up, and there would be no great advantage gained; if it is pointed out too far, we run the risk of isolating the troops. To pin it down to something definite, when considering units that are not particularly large, it would seem that the minimum should be an effort to attack toward the probable zone of the enemy artillery.

3d - FRONT

In calculating the front (width of the zone of action) we must bear in mind not only the usual considerations, but also the possibilities of an oblique engagement and the necessity of changing direction that may come up. If these two eventualities are probable, reserve units will be necessary and the fronts of action must be calculated so as to enable the units engaged to hold out the reserves they will require.

4TH --ZONE OF PRINCIPAL EFFORT

The convergence of directions on the enveloped wing automatically makes it a zone of principal effort.

But, in addition, the wing attack is subject to the laws of ordinary combat. If, therefore, it is not in condition to act advantageously along all its front simultaneously, it must, itself, proceed by a series of "principal attacks", so calculated as to keep, or bring back, the general axis of progression, along the assigned direction.

5TH--LIMIT AND STRAIGHTENING OUT OF THE WING ATTACK

Whatever the force of the wing attack, it is probable that it cannot act indefinitely in a sense perpendicular to the frontal attack. We must, then, limit its objective. How shall we choose this objective?

Naturally, the thing to aim at is to obtain the greatest possible effect from our attack, and to extend to the limit, by fire actions, the results obtained by our infantry. And as this distant action by fire is chiefly an artillery affair, we may say that the first object of the flank attack must be to bring on the enemy's flank and as close as possible to this flank, a powerful mass of artillery intended to get action from the flank on the enemy line and, above all, on the probable zone of emplacement of his artillery.

In order to be able to rapidly open fire, this mass of artillery must have good observation posts and, in consequence, the first objective of the wing attack should be the capturing of a good line of observation posts on the flank of the enemy.

This objective having been decided upon, the final trace of the zones of action in the area of the wing attack will flow out of it naturally.

Finally, since the troops making the wing attack are usually the best placed for staring the pursuit, the maneuver plan must arrange in advance the directions of eventual advance, traced in such a manner that the dispositions maintain, as long as possible, an enveloping form with respect to the retreat didpositions of the enemy. Usually, this will include a straightening out of the direction of attack for the troops charged with the wing attack.

We will find an example of an operation of this sort in the battle of Montdidier, in which the left of the First Army has made a real wing attack, even a very marked type, since it is made at nearly a right angle. Sketch No 73 shows the assignment made, before the attack, of the zones of action and of the successive objectives as far as the Division echelon. We see that it was necessary to play three divisions of the direct attack (the 66th, 15th Colonial and 3d) "straight to the cushion", before finding one that can make the "carom" and continue the advance commenced.

The operation seems to have presented no special difficulties with respect to the distribution of the artillery zones, although the 37th Division had to advance in the field of fire of four divisional artilleries. The proof is conclusive and shows that there is nothing against this species of maneuver.

As a result of the obliqueness of the limit between the British and French Armies, the First Army (French--Tr.) took a general direction parallel to that of its left wing. At this side, therefore, it was not necessary to change the initial directions. On the contrary, we find a straightening-out of the directions of the 35th Corps, where it was necessary to squarely straighten out toward the east division whose initial orientation had been in the direction of the northeast.

CONCLUSIONS

If we try to sum up the conditions favorable to the different wing maneuvers we have just studied, we can class them into two principal groups: conditions with respect to situation and conditions with respect to preparation.

1st --CONDITION WITH RESPECT TO SITUATION

The wing maneuver is particularly indicated when we find ourselves simultaneously in presence of the three following conditions:

The enemy on a narrow front.

The enemy immobile;

A field of battle that has few compartments ,thereby permitting rapid propagation of the result obtained at the enveloped wing.

2d CONDITIONS WITH RESPECT TO PREPARATION

It is evident that when the commander makes a decision to execute a wing maneuver, all of the conditions noted above cannot be fulfilled. Also, the enemy may modify his dispositions before the maneuver is started.

We should, therefore, endeavor to orient the preparatory combat so as to correct such disadvantages as may exist in the enemy dispositons i.e.,

Make the enemy close in his front if this front is too extended.

Immobilize the enemy and oblige him to use his reserves in such a measure as is necessary to enable the wing attack to determine a decisive crisis.

When we can, so locate the field of battle that the terrain will be favorable to a wide repercussion of the results attained by the wing attack.

CHAPTER V

CENTRAL MANEUVERS

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In order that they may succeed, wing maneuvers demand that the enemy be gathered on a narrow front. But the danger of envelopment is such that few generals resolve to accept the risk. So, we frequently see armies deploy, in advance, on very extended fronts so as to avoid giving any opportunity for wing attacks.

The tendency toward the extension of fronts appears frequently at the beginning of each new period of war, and we must not believe that this phenomenon is particular to our epoch. We attribute, and with reason, the extension of fronts to the increase in range of modern arms; but there certainly are other factors that enter into it.

If, for example, we consider the period of the wars of the Revolution and the Empire, a period during which the armament was not modified, we observe, on the whole, (setting aside some very natural exceptions) a progressive reduction of the fronts of combat: Jourdan's 75,000 men fought at Fleurus on a front of 15 miles. With a similar strength, the front at Austerlitz was eleven miles. Finally, with still the same strength, the front at Ligny was three to four miles. Say, for a figure of 15,000 men, the approximate strength of our present divisions, average fronts of 5,500, 3,300 and 1,320 yards. We are able to note an analagous evolution in the late war, since the combat front of the Division oscillated from 5,500 to 6,600 yards (1914) to 1,320 or 1,650 yards (1917).

Thus we find, in military history, currents which trend sometimes toward extension and again, toward closing in of the fronts. When we study the wars of the past, we note that the exaggerations in the extension of fronts had the result of opening possibilities for central maneuvers. It is probable that this will again be the case in the future.

The two best known forms of central maneuver are: the maneuver on interior lines, and the rupture of the front by a central attack (Sketch No. 85). To these two procedures we shall here add what we shall call dislocation actions and which procede both from the central attack and the maneuver on interior lines.

MANEUVER ON INTERIOR LINES.

The maneuver on interior lines has long been studied in the old treatises. It was frequently used in the past and we refer the reader to the campaigns of 1796, 1813 and 1814. Marshal Hindenburg also used it in Poland in 1914 (Sketches Nos. 74 and 75) and in 1915.

We can trace its origin, in modern warfare at least, to the shuttling back and forth of Berwick and to the actions in mountain warfare. In fact, it is in the mountains that it is most easily applied, because in mountainous country the terrain is highly compartmented and tends to completely isolate the columns or groups separated by the mountain masses.

The system presupposes that the enemy is broken up into several masses which are too far separated from one another to be able to take part in the same battle. We then place, opposite each of these masses, a detachment charged with containing it. The main body of our forces, gathered together, moves, in succession, on the different parts of the enemy and attacks them, one after another. This is the old application of the principle of economy of forces such as we summed it up at the end of Chapter III.

The first condition is, as a matter of fact, easy enough to satisfy, and it seems that the maneuver on interior lines, which succeeds when the different fractions of the enemy are following parallel directions, is dangerous in front of an enemy whose different corps, even though with wide intervals, are marching on concentric directions. At all events, we know of few examples where a maneuver on interior lines has succeeded in this second case.

The apparent simplicity of the procedure must not give us any false ideas as to the difficulty of putting it into practice. On this point, refer back to the hesitations and anxieties before the battle of Castiglione as revealed in the military correspondence of Napoleon; we shall note what great strength of soul is necessary to play such a game.

RUPTURE OF THE FRONT BY A CENTRAL ATTACK.

The securing of the decision by a central attack was studied a great deal before the war by critics of the 1895 regulations.

We recall that this regulation, to a great extent, based the effect of the decisive attack on the choice of the point of attack. This point is clearly indicated when we attempt to secure the decision by a wing attack. The problem, naturally, is more difficult in the case of a central attack.

In his "Consequences of Progress in Armament", General Langlois wrote: "The commander will direct his effort on a weak point of the enemy line if the results of the preparatory combat have enabled him to determine one of them; if not, he will choose the zone of attack that will best favor converging effects of powerful artillery and infantry fires and approach, under cover, of the attack troops."

So, we shall choose as objective a weak point in the enemy line and if we do not know one, we shall take a point that is easy to attack.

This is a logical way of going about it, for, first, it is necessary that our attack succeed. The condition is evidently necessary, but is it sufficient?

In practice, we are often led to seek a solution against a salient of the enemy front. Indeed it is there that it is easiest to converge efforts. But, if a salient is, by definition, a weak point, its capture rarely is sufficient to disorganize the enemy disposition; the latter would indeed be badly advised in risking his battle on such a poor card. So, in 1900, Commandant Auger, studying the central attack not only from the point of view of its facility, but also from the point of view of its consequences, stated the disadvantages of the choice of a salient as objective of a decisive attack: "Savigny's attack is against a salient of the enemy's line, at a point where, after a short time, he must find himself confronted by several more or less strong reserves"........(1)

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(1) Three Tactical Studies.

What we must do is to guard ourselves against the uncertainty that lies in the words "weak points". Tactically speaking, a weak point is a point at which we can attain success at little cost. But if we consider it from the point of view of importance of result obtained, by "weak point", we shall mean a point the capture of which will place the enemy in a dangerous situation. These are two very different things, and the importance of the means given to the attack would not be sufficient to transform into a decisive success that which, from the general situation, can be only an episode of combat.

Therefore, if we desire that the central attack succeed in piercing the enemy front, it is not enough to organize and support it powerfully; it is not enough to have it strike a point that is easy to capture; it must also strike upon a really weak point of the enemy, that is to say, upon a point in rear of which the enemy has not brought, or cannot bring, reserves. Consequently, we must have insured the engaging of these reserves elsewhere. The central attack cannot be separated from the ensemble of battle any more than can the wing attack. Here again we must see the combat as a whole and not forget that all the acts cooperate in the final result.

So, in 1915, we see General Petain in his Observations on the battles of Champagne, affirm the necessity of preliminary attrition and bring back the idea of unity of combat.

"The battle of Champagne shows us the difficulty, if not the impossibility in the present state of armament, the method of preparation and the forces opposed to us, of taking, in a single dash, the successive positions of the enemy....."

"Therefore, before thinking of renewing attacks as costly as those of September, it would appear desirable to proceed methodically with attrition of the enemy. Our plan will thus comprisd two successive phases: attrition of the enemy, an attempt at a decisive action.

A. -- ATTRITION OF THE ENEMY.

"Attrition of the enemy can be attained only through a general push of the Franco-British forces. This is the frontal attack preceding the decisive action. In May and September of last year, the necessity of carrying out this action of attrition does not seem to have been recognized; to tell the truth, we did not have sufficient forces to bring it about and we started the decisive action without transition. Only two points of the front were attacked. On the other points, we limited ourselves to "interventions" by light artillery that could deceive no one: The result was to be expected. Free in their movements, not used up in any way, the Germans brought all their reserves, all their heavy artillery, into the threatened sectors,...."

"Pressure on the entire front with a view to using up the enemy is aimed only at the capture of objectives of slight depth (the first enemy position). While this requires more means than those at the disposal of the enemy, it does not require as many means as those demanded by a decisive attack. We do not attempt to make a break-through. What we desire in this first act is to cause the enemy such losses that it will be possible, later, to attack to the limit on some selected points, throwing strength against weakness."

"In reality, attack in the combat of attrition has only one object: force the enemy to come out of his shelters, man his trenches, bring up his reserves so they will fall under the fire of the assailant. Consequently, there is no need of attacking in deep masses, of bringing up large reserves behind the assaulting troops. The principal role falls on guns and (other --Tr.) engines, not on the infantryman.

B.-- THE DECISIVE EFFORT.

"When the enemy has been sufficiently used up, we will pass to the decisive effort. This will be made against a certain number of points that appear to be most advantageous and in the form of successive assaults against the various fortified positions of the enemy. During the same time, the combats of attrition will continue with all possible intensity on the whole of the front of the Armies in order to hamper liberty of action of the enemy and to prevent him from withdrawing forces to move to other parts of the front."

"As to the form of successive assaults:

"After an assault, the losses suffered by the infantry, particularly the officers and non-commissioned officers, are such that it is powerless to produce a second effect similar to the first. It can put in the few works indispensable for occupying the conquered terrain, but nothing more."

"The artillery, after having made a bound in advance must again make a minute preparation of its fire. We then have to relieve the infantry and give time to the artillery to execute its new preparation. From this result obligatory pauses between the successive attacks, pauses which the enemy will utilize to pull itself together. So we find ourselves confronted by two contradictory necessities -- on one hand, we must suspend the attack in order to make a new preparation -- on the other, we are obliged to act with speed in order to give the minimum of time to the enemy. Circumstances will guide the commander in the preference he should give one or the other of these exigencies....."

RESUME

"First, a general push, manifesting itself by great activity of infantry and, particularly, artillery, along all the front for several months, until it is clear that morale and material superiority is on our side. Then a decisive effort upon part of the front, having the object of producing in several sectors of a certain width (12½ miles at the minimum) or in a single one thirty to thirty seven miles wide, what we call the "break-through", but which, in reality, can be nothing but pushing the enemy out of his zone of fortified organization."

12-17-24/bmmd

"The break-through is not the object, but the means of arriving at delivering battle in open warfare by attacking the enemy upon one or both of the flanks formed by a withdrawal of a part of the front." (1)

What is the decisive value of the ccentral attack?

Marshal Petain gives his view clearly in the last lines given above:

"The break-through is not the object, but the means to arrive at giving battle .....by attacking the enemy.... on the flanks formed by the withdrawal of a part of the front....."

Study of history confirms this opinion of the Marshal. Examples of great successes obtained solely by means of a central attack against an enemy in position (2) are extremely rare; perhaps, even, there are none.

Napoleon himself failed at it; yet the conditions of his time certainly were more favorable than the present epoch.

In his career we can find three examples of an attempt to secure the decision against an enemy in position by a central attack: Wagram, Ligny and Waterloo.

At Wagram (Sketch No. 76) the idea of an action against the center seems to have formed in Napoleon's mind at about noon, when he noted the entrance into line against his left flank of the right wing of the Archduke Charles: VI Corps advancing its right to the Danube against Boudet's division, V Corps in echelon to the left of the VI. This sudden extension of the enemy's front forms in Napoleon's mind the idea of an attack at the point of junction of the enemy's frontal and enveloping attack. He sends Massena toward the south to support his left and he prepares his attack in front of Sussenbrunn. An attack delivered immediately would perhaps have found a gap in the enemy front; but as this attack is, in the Emperor's mind, only secondary, he waits until Davout has taken the Neusiedel Plateau. At this moment, the enemy has reestablished his front and Macdonald's attack strikes a full line. Consequently, depite despite the power of the fire preparation executed by 100 guns, it doesnot succeed in piercing the adverse front; it can only take its immediate objective and throw back the enemy on Sussenbrunn and Breitenlee.

At Ligny, (Sketch No. 77) Napoleon, with 78.000 men attacks Blucher who has 87,000. The combat commenced between 2:00 and 3:00 PM. It was extremely violent on the front: Saint-Amand -- Ligny. Toward 8:00 PM, Blucher has completely engaged two of his corps; the third, Thielmann, has done little and it is contained on its front by Grouchy.

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(1) Observations on the battles of Champagne.

(2) As regards study of the central maneuver against an enemy in movement, we link it with "actions of dislocation", but, in this case again, we shall see that the conclusion is not modified.

Blucher has just failed in an attempt against the French left wing; everything that was in reserve behind his center has been used in this action. In particular, there is nothing in rear of Ligny, and in this area is an interval of about one-half mile between Ziethen's left and Thielmann's right.

It is on this point that Napoleon, at about 8:30 PM launches the 12,000 men (that are still unengaged) of his Guard and Milhaud's 4,000 cavalrymen. Supported by a powerful line of artillery, this mass passes through Ligny, pierces the Prussian line, exhausted by six hours fighting, and captures the Bussy plateau. The movement is made so rapidly that Thielmann's corps is unable to intervene and the Prussian army, cut into two parts, hastily withdraws toward the north.

We cannot dispute the importance of the result obtained by the central attack at Ligny. It is advisable, however, to note that it profited by an unusual set of exceptional circumstances: it bore upon a point in rear of which there were no more reserves, close to a gap in the fighting line, and, in addition, it was executed by the Imperial Guard. Yet, though the enemy was forced from its battlefield, we cannot say that Napoleon completely obtained his goal, which, was to put the Prussian Army out of action.

At Waterloo, the entry into line of Blucher did not allow Napoleon to devote all the strength that he had originally intended to the attack on Mont Saint Jean. If it is difficult to draw conclusions from his check, it is a still more delicate matter to build up conclusions on what would have come to pass under a more favorable hypothesis.

It does not appear that the war of 1914-1918 has brought out new facts that contradict these we have mentioned. Mackensen's attack on the Dunajec in 1915 may perhaps be an exception to the rule; but the Russians were on such an extended front that we hesitate to draw conclusions from a battle waged under such special conditions. The ruptures of the front made by the Germans in 1918 and which appear to be large-scale applications of the procedure we are discussing, resulted in grave crises indeed; but none of them gave really decisive results.

So, the piercing of the front is not, of itself, a decisive act. Set back in its place in the evolution of combat, it belongs, rather, to the preparatory combat. This will be brought out more clearly in the course of our study of dislocating actions.

DISLOCATING ACTIONS.

History shows us, however, that decisive successes have been obtained by central maneuvers. It is because there was a combination of certain special circumstances which we must bring out.

The best known example is Austerlitz; but as there is a tendency to consider Austerlitz as an isolated and very exceptional case, it appears advisable to us to give, here, some additional examples.

Naturally, we shall find them in the periods of extensions of fronts to which we have referred at the beginning of this chapter, and, particularly, in the wars of the French Revolution.

From this point of view, the battles of Neerwinden, Fleurus and Rivoli appear to us to be particularly typical.

At Neerwinden (Sketch No. 78), March 18, 1793, Dumowiez has distributed his 45,000 men in eight columns which are to cross the Grande Geete on a front of nine and one-half miles, simultaneously attack Cobourg's army (in position behind that river) in front and flank, and then advance concentrically on Saint Trond: This plan is, as we see, the very normal putting into practice of the procedure we have described in the preceding chapter under the heading of "converging attack."

After the passage of the Grande Geete, as a result of the resistance of the first Austrian lines around the support points of Oderwinden, Neerwinden and Dormael, also as a result of the error of the 6th column which turns toward Dormael instead of marching on Nerlanden, two centers of attraction are formed. One of these is near Neerwinden, the other near Dormeal, around which (Dormael) the French column gather opening a gap of two to three miles in the field of battle. Cobourg's reserve enters this gap and takes the interior flank of the French left while the Austrianstroops at Dormael execute a direct offensive return. Under this double pressure, Dumouriez's left is crushed and thrown back into the river.

We see that in this case the dislocation of the adverse front was produced during the preparatory combat. The troops charged with the decisive action entered a gap in the enemy front and, finally, the decision resulted not from a central attack, but from a concentric maneuver of front and wing against an isolated fraction of the French Army.

At Neerwindan, the dislocation of the front was produced in the sense of width. Fleurus will show us a dislocation in the sense of depth (Sketch No. 79).

On June 26, 1794, Jourdan, who has about 75,000 men at his disposal, distributes three-fourths of them on a perimeter of fifteen miles; the rest is in reserve behind the center.

The Austrians attack in five large corps: 40,000 men under Orange at the right; at the center, 45,000 divided into three columns; 20,000 at the left. We shall not concern ourselves with the operations that take place on the western part of the battlefield.

In this area, at the French left wing, Montaigu's division, which was near Trazegnies, gave way from the opening of the day and fell back toward the Sambre. Orange's corps pursued it in two columns -- one on Fontaine l'Eveque and one on Marchiennes.

The French center, on the other hand, held firm from Thumeon, to Lambusart. At noon, there resulted from this a gap of four miles between the Austrian right and the Austrian center. Kleber, who commands the French left wing, profits by this circumstance. He places a part of his available troops along Pieton Brook and launches Duhesme's brigade in the direction of Courcelles to take the Austrians in reverse. This maneuver succeeds perfectly and soon Orange's 40,000 men ---nearly half the enemy army -- retire before Kleber's 25,000 men and abandon the field of battle.

Here again, thewhole is a result of the preparatory combat. It resulted from the inequality of the resistance offered by the French troops upon adjacent points of the battlefield.

Neerwinden and Fleurus show us defensive preparations of a central maneuver, i.e., preparations resulting from a defensive combat. Rivoli is an example of an offensive preparation (Sketch No. 80).

On January 14, 1797, the Austrians are to execute an offensive advance on Rivoli, to wit: Lusignan by way of Offi, Liptai, Koblos and Ocskay by way of the Rivoli plateau. Quasdonowitch's column advances by the Odige valley and is to get up on the plateau when the main body shall have opened the defile of Incanale for it.

Joubert had fallen back upon Rivoli, in rear of the Incanale defile. Bonaparte, who is still awaiting the rest of his troops, has only this division at hand. However, he does not hesitate to violate his favorite principle of giving battle only after he has all his forces together; he judges it more important to maintain the separation that exists between the enemy center and the enemy left; he immediately gives Joubert the order to move forward and to establish himself beyond the debouchment of the Incanale road.

We do not see what would have prevented the success of the Austrians plan had Bonaparte stayed at Rivoli; whereas, by moving himself in advance, he gave himself the possibility of, at a given moment, making an effort against a part only of the enemy army. Indeed, either Quasdanowitch would not dare to go up on the plateau and Bonaparte would have to fight only the enemy center; or else (as happened) Quasdanowitch would try to debouch and in this case the French general could, covering himself by Joubert, surround and crush his adversary when he left the defile.

At Austerlitz (Sketches Nos. 81 and 82), we see the dislocation of the front brought about by a mixed preparation, i.e., offensive on certain points, defensive on others.

On December 1, 1805, the French army has established itself defensively behind the Goldbach with Lannes' Corps, as advance guard, holding the debouchments of the army. On account of the difficulty of forcing the passages of the stream, the Allies have decided to turn Napoleon's right. This operation is clearly indicated (i.e., advisable --Tr.) and it failed to succeed perhaps only because it was not combined with a frontal attack strong enough to fix the French army and prevent it from debouching.

Their movement is to be made under shelter of the Pratzen plateau, under the protection of the advance guard (Bagration) pushed up opposite Santon.

Napoleon has divined their project, the execution of which had been started the day before the battle, and has decided to fall upon the flank of the Austrian columns when they shall execute their movement. He lets them get well started on their movement so as not to find too many on the Pratzen plateau and on December 2, at about 8:00 AM, all the French army advances, with the exception of Davout, who is charged with interdicting the passage of the lower reaches of the Goldbach.

This plan of maneuver, offensive at the left, defensive at the right, combines with the enemy's plan so as to accentuate the extension and consequently the dislocation of the Austro-Russian front. At 1:00 PM, this dislocation is irremediable.

At the north, Lannes has repulsed Bagration, who finds himself isolated from the center by a gap of one and one-half miles. At the right wing, Davout fights the main body of the Allies, which does not succeed in crossing the Goldbach. The enemy center is isolated at Pratzen and it is into a veritable unoccupied gap that the main body of the French mass (charged with the decisive effort) penetrates: 27 battalions, which, at this moment, have only 8 Austro-Russian battalions in front of them.

Here again the piercing of the line has been the "work" of the preparatory combat, which has had the result of cutting the enemy army into two well-separated parts. We know, moreover, how the turning to the south of the French center gave to it the entire enemy left wing.

We can turn to other examples of central actions crowned with success during this period: Tourcoing, Genola, Sagonte, Ratisbonne, Montmirail. The conclusion will always be the same.

In all these examples, we find, at the beginning of combat, a preparation whose procedure have varied, but which has always had the result of dislocating the adverse front and isolating a part of the enemy army. Againdt this isolated fraction, we see the intervention of a reserve of troops which attacks it in flank and in reverse while it is occupied on its front, and which, thanks to this favorable condition, puts it (the isolated fraction.--Tr) out of action even when it is not numerically superior to it. Finally, we note that the thing that brings the decision is not the piercing of the front itself, but the explcitation of the situation that it created.

And, at the same time, we comprehend that the central attack cannot be decisive if it has to use all its available means for piercing the line.

12-17-24/bmd

If we go back to the examples we have studied and try to pick out the conditions in which these dislocating actions are produced, we shall find three special circumstances always present, to wit:

-- the enemy was on an extended front;
-- the enemy had an offensive attitude;
-- the terrain permitted of a segmentation of the battle into several combats, each separate from the others.

These three circumstances seem indeed to be the conditions we are looking for, because they are exactly the converse of those which we recognized as being favorable to the wing maneuver; and, moreover, it could not very well be otherwise, since the central maneuver is, in a way, the antithesis of the wing maneuver.

We may note, moreover, that dislocations of the front are not produced as soon as one of these three conditions is lacking.

We frequently find them existing simultaneously during the military period from 1792 to 1805. Beginning at this latter date, reduction of front accelerates as we have previously shown, and opportunities for central maneuver, frequent in the preceding period, became more and more rare.

In the modern wars of 1865 and 1870, we generally find the opposite circumstances present. French and Austrians fought on narrow fronts and stayed on the defensive. In addition, increase of the range of arms over a restricted terrain rendered localization of combat more difficult than it was formerly. Maneuver against the center, therefore, was not indicated, and we can understand why in presence of the uncertainties and dangers of this mode of seeking the decision the Germans gave it up and referred the wing attack.

In the Russo-Japanese war we again saw wide fronts and compartmented terrain appear. The greater part of the time one adversary only attacked; but as soon as the Russians wished to assume the offensive, we again saw the tendency toward the dislocation of fronts.

We can note it during the battle of the Cha-Ho (Sketch No. 83) by glancing over the situation of the Russian army on the morning of October 13th, say two days after the launching of the Japanese counteroffensive. At this moment, the Russian line is dislocated into three groupd echeloned on the diagonal of a square that is twenty six miles on each side.

Eastern Group, I and II, Siberian Corps, echeloned in advance at Sianchantsi and Kaoutaitsy.

Center Group, I Corps and IV Siberian Corps at Mantiafyn and Hamitant, six miles to the rear and right of the Western Group.

Right-hand Group, X Corps along the front: Linchinpou--Chaho-pou -- Rchoualintza, also at a distance of six miles in rear and to the right of the center group.

The Japanese have not profited by this situation; they had oriented the ensemble of their maneuver with a view to an effort against the Russian right wing, and their numerical inferiority did not allow them to try for the decision at two points at the same time. Nevertheless, this dislocation was a source of great anxiety to the Russian command during the days of October 12, 13, and 14.

At the opening of the campaign of 1914, the adverse armies frequently came together offensively and on wide fronts. Phenomena of dislocation, more or less marked, also reappeared.

The most typical case is that of the Fourth Army, on August 22. The front, widely stretched out moreover as a result of the obliqueness of the engagement, does not succeed in forming itself, and the battle resolves itself into a series of isolated corps combats at Bellefontaine, Rossignol, Straimont, Saint-Medard, Bertrix and Maissin (Sketch No. 84).

At Guise, we also see the beginning of a dislocation of the German front, and it is permissible for us to think that that is one of the factors of success of the I Corps.

The battle of the Marne shows us two large rips in the German front: one in front of the British army, the other to the east of Fere-Champenoise. We have previously sden how this latter was exploited by the Ninth Army (Sketch No. 61).

In 1918, we did not see simultaneous offensives of the two adversaries and, consequently, no spontaneous dislocations of the fronts of combat. It is likely that certain episodes occurred at the moment of great crises, but the details of that period are not yet well known.

Thus, every time that we have the conditions enumerated above existing simultaneously:

extended fronts;
offensive attitude of the two adversaries;
compartmented terrain;

there is a chance that we shall see dislocations of the front produced spontaneously in the front of combat.

Under these circumstances, two attitudes are possible. We may try to stop, or to facilitate, these dislocations.

To stop them. The simplest thing is to have recourse to the defensive attitude.

To facilitate them. The game, of course, is not void of danger, for the situation may turn against us. But if the plan of maneuver comprises a central action, it may be advisable to try to secure, through the natural evolution of combat, a situation which would be infinitely more costly to create if we had to bring it about by a direct attack.

From the examples studied above, it results that the preparatory combat should have as object:

maintaining lateral dispersion of the enemy;
accentuating his dispersion in depth;
carrying the battle onto favorable terrain.

To maintain the lateral dispersion will often oblige us to go to meet the enemy. It is indeed probable that the extension of his front is but momentary and that he intends that his columns are to form again in a converging march toward the zone we are occupying. Therefore, if we wish to "catch him in the act" of dispersion, we must get close to him as rapidly as possible so as to attack him so close to his point of departure that he will not have time to close his columns together. If, on the contrary, we wish to prepare a wing attack, we would do well to stay in place or move to the rear; we would thereby allow him to finish his converging movement, which would allow us to more easily find his wing.

To accentuate the dispersion in depth. There is no other procedure besides cutting up the front into offensive sectors and defensive sectors, so as to make progress at some points while giving way at others. We shall thus utilize the offensive intentions of the enemy for the advantage of the goal we are seeking; the efforts he will make on his side will be added to ours and will tend to augment the dispersion in depth. To try to stop the enemy everywhere would lead to the creation of a continuous front, which is a preparation for a wing maneuver. In addition, we cannot try to break the enemy front without breaking our own front ourselves; but the intervals we shall have allowed to be produced (in our line --Tr.) will be without danger for us if we are prepared to counterattack the enemy fractions that shall venture into them.

In the third place, the anterior maneuvers must have been combined so as to carry the battle onto terrain where it can break up into several quite localized combats, separated one from the others. With modern arms this condition is absolutely essential. It is useless to try for dislocations on terrains that are very open and which can be swept by fires in every sense; it cannot be done. But favorable terrains are not lacking; a glance over the map of the frontiers is sufficient to convince us of this.

Whether the rupture of the front is provoked by a central attack or whether it is produced spontaneously, it never is anything but a means of succeeding in isolating a part of the enemy forces so as to attack the part isolated in front and in flank.

That is to say, the central maneuver finally transforms itself into a series of wing maneuvers. It is evident that these wing maneuvers are of limited reach, they require precautions and special security; but, with these reserves, they come under one of the cases that we have considered in [illegible] the preceding chapter. Thus once more appears the impossibility, in tactics, of isolating the part from the whole and of limiting ourselves to the study of a few special situations.

12-17-24/bmmd

The preceding considerations will find a direct application, even at the most "humble" echelons, in gaining contact with and engaging an enemy in movement, as well as in the counterattack and its riposte, whenever the combat shall take place on terrain that is sufficiently compartmented. Many opportunities for central maneuvers will then present themselves to units of all ranks and that is why it has appeared nacessary to us to so heavily stress problems which, at first sight, seem to be problems for only the very highest echelons.

12-17-24/bmmd

CHAPTER VI

PREPARATION OF THE MANEUVER.

We have seen that there is a close connection between the different parts of a maneuver and that in each system the preparation must satisfy certain special conditions.

We have also noted that to each maneuver procedure corresponds a special preparatory disposition.

Finally, we have arrived at this conclusion: that the preparation has the object of creating a situation favorable to the projected maneuver.

It is now necessary to say a few words on what we might call the procedures of preparation, i.e., the means we can use to satisfy the various desiderata we have noted.

It is to be clearly understood that there is no reference to what has been said in Part Two on the subject of the approach march, the gaining of contact and the engagement. The necessities we have noted will always exist and, once the decision is made, it will be brought into being only on condition we submit its execution to these necessities. But these necessities are obligations rather than motives; they are not enough to give a basis for the decision and it is not inadvisable to study the question from a slightly different point of view.

We can distinguish two phases in the preparation: the immediate preparation and the distant preparation.

The immediate preparation has a double object: to create the favorable situation required by the type of maneuver that we have in view; to prevent or delay the enemy's maneuver.

Distant preparation is with a view to organizing the distribution of the forces as a function of the necessities of the ensemble of the maneuver.

TO CREATE THE FAVORABLE SITUATION.

In the first place, this comprises the choice of favorable terrain and, then, actions with a view to effecting modifications in the front, the attitude and the dispositions of the enemy.

The question of the choice of the terrain cannot give rise to many new developments. It will be sufficient for us to recall that, depending on the maneuver we have in view, the choice may be quite different and that, for example, compartmented terrain will be preferable to terrain that is not compartmented, or vice versa.

ACTION ON THE ENEMY FRONT.

We may have in view either a drawing together or an extending of the enemy front.

The drawing together of the enemy front may be obtained directly by a converging attack (preliminaries of the battle of Liao-Yang), on condition that the wings of this attack be sufficiently reinforced to insure obtaining the desired result. If this procedure cannot be employed and it is a case of an enemy in movement, we may attempt to contain him by opposing to him a front inferior to his own; but this necessitates a "defensive bend", an operation which comprises all the difficulties we have already mentioned.

When opposed to an enemy in position and in preparing, for example, a wing maneuver, we may also attempt a return to the old procedure, which consists of engaging only on the part of the front adjacent to the wing which we are endeavoring to envelop (battle of Majenta). We of course risk being enveloped ourselves on the other wing and we must cover ourselves on this side by defensive echelons. This procedure is advisable only for a rapid action, for the enemy will delay but little in pulling himself together.

To obtain an extension of the enemy front, it is sometimes sufficient to threaten him with envelopment; but the results are a matter of chance every time that we speculate upon a false movement of the enemy.

The sole procedure that has proved satisfactory is the oblique engagement which obliges the enemy to deploy upon the diagonal of his rectangle of march. The initial front may sometimes be raised, in this way, to double its width, as in the engagement of the Fourth French Army on August 22, 1914. (Sketch No. 84). In addition, the obliqueness of the engagement, when effected by surprise, creates a situation very difficult to clear up for the one subjected to it, and this may be an advantageous means of taking, or retaking, the initiative of the maneuver.

ACTION ON THE ATTITUDE OF THE ENEMY.

This action is relatively feeble, for the attitude of the enemy is not known to us and we can commit grave errors in speculating on the reactions that we try to determine he has made.

However, it does not seem unreasonable for us to count on what we might call a certain "inertia", (taking the word in the sense employed in mechanics) and which results in this: that troops, of themselves, modify with difficulty the attitude in which they find themselves. In the greater number of cases, the troops continue to advance, or defend themselves, until they receive an order to act otherwise. That moreover, is not passiveness; it is discipline and obedience to the orders of the command. Therefore, we can count, in a certain measure, on the continuation, for at least a certain time, of well-marked attitude of the enemy.

It is very difficult to change the attitude of an enemy decided on the defensive. Some famous examples might make us suppose the contrary, but we have considered them in making the statement in the preceding sentence. Napoleon was able to succeed in it at Austerlitz; but in 1812 and even at the beginning of 1813, all his invitations were without results.

Likewise, during the late war, the two adversaries' habit of proceeding by limited objectives guaranteed them, nearly of necessity, against any chances.

In reality, we can get a grip only on the offensive attitude. We can either thwart it by the defensive or let it develop, either into a gap or following after a retreating maneuver. In the preceding chapters we have shown in what cases these various solutions might be found of use.

ATTRITION ACTION

Attrition action is the principal role of the preparation. We have seen the importance attached to it by Marshal Petain and the procedures he pointed out to bring it about.

The object of the attrition action is to oblige the enemy to engage his reserves in so short a lapse of time that he cannot reconstitute other reserves. Attrition action intended to prepare a decisive action must be relatively rapid, else it will have to be all done over again.

When opposed by an adversary who holds himself on the defensive, there is no other attrition procedure than the direct attack such as we have described it in Part Two. However, the attacks having the sole object of wearing the enemy and attracting his reserves are generally limited objective attacks; exploitation of the result they have obtained is made at other points.

These attacks have sometimes been given the name of secondary attacks. There is no need of saying, here, how improper this expression is for anyone who is convinced that the final success is the resultant of all acts, even the very smallest, of which battle is composed.

The adversary who attacks subjects himself to attrition. In addition, he cannot attack without making sufficient call upon his reserves, and, consequently, without diminishing the means at his disposal. A heavy attack of the enemy will therefore hasten the issue of the affair. It is the province of the command to see whether or not it desires to accept the decisive struggle where the enemy offers it or if it prefers to carry the fight to another point. Verdun, or the Some ....

At the beginning of a battle against an enemy in movement, we may gain by trying for priority of deployment and using it so as to set up an extremely active combat of attrition. The procedure is delicate in its handling for we run the risk of getting involved, and we must be able to stop it in time. The Germans practiced a great deal in this before 1914, and they used it against us at Guise and in the battle of the Ardennes. It necessitates supple and highly trained troops but the results it can give justify the labor of preparing for it.

TO DELAY OR STOP THE ENEMY MANEUVER.

While we are developing our maneuver, the enemy also tries to effect his own. We must "beat him to it."

To do this it is not always sufficient to hasten the development of our own maneuver for there are delays in execution that we cannot get away from. We, therefore, must guard against the enemy's getting too disturbing a start on us.

Generally, we will not be able both to completely check the enemy maneuver and develop our own. But between the two extreme solutions: guard ourselves at all costs against the enemy's enterprises or neglect them completely -- in other words, between absolute security and absolute risk -- there is sufficient margin for a reasonable solution.

We cannot succeed economically unless we have been able to determine the enemy's plan of maneuver. From this arises the importance we have attached to the interpretation of information. We recall that we have divided this information into two categories: those which refer more particularly to the development of our maneuver and those which concern the enemy's maneuver. It is to the second category that we now refer.

Once we have picked out the maneuver being attempted by the enemy, it is easy to find and organize the appropriate parry. If this basis be lacking, we have no resource other than in security calculated according to the possibilities of the adversary. But, whatever we may do, this security is necessarily costly, and can be brought into effect only at the expense of the action.

In every case, we must bear in mind that relative security is sufficient. It is less a question of definitely checking the maneuver of the enemy than it is to so hamper its evolution that it cannot become decisive before our own. This simple consideration will enable us, in many cases, to limit the expenses to be made in obtaining a desired result.

DISPOSITIONS PREPARATORY TO THE MANEUVER.

We have seen that to each type of maneuver corresponds a special preparatory disposition (Sketch No. 85).

Thus, for a converging attack, the units will be placed sensibly abreast of one another and widely spaced at the start. Everything except the reserves will be in first line.

For an enveloping attack, the disposition will comprise a first line nearly equal to that of the enemy, and a strong reserve in rear of the wing at which we intend to envelop.

For a combined frontal and flank attack, the initial disposition may be the same, but the reserve intended for the maneuver must, at the right time, be thrust clearly outside the wing so as to take the necessary distance it requires.

If we have a central maneuver in view, the general reserve will be placed behind the center, and will be strong enough to be able, successively, to break the enemy front and cooperate in a wing maneuver against a part of this front.

Finally, if we have decided to demand dislocation of the enemy front from the preparatory combat itself, the first line must have a checkerboard trace and be backed up by partial reserves so as to secure, from the beginning, in the enemy front, sinuosities that we shall endeavor to accentuate later on.

This correlation necessary between the initial disposition and the maneuver procedure is not without its disadvantages. For, under these conditions, the disposition reveals the projected maneuver, and if the enemy becomes aware of the disposition, he may be able to deduce our intentions from it.

Now, it is evidently advisable in having the maneuver plan unmasked as late as possible.

To do this, two procedures can be used.

The first consists in maintaining an amorphous (shapeless, uncrystallized--Tr.) disposition as long as possible, capable, however, of being rapidly transformed at the last moment.

Numerous examples of this sort will be found in military history, particularly in the campaigns of Napoleon. Of course they are not useful as they stand, but they point out the path along which we can seek the solution of the problem.

The second procedure consists in veiling the movements so as to escape the investigations of the enemy's aviation and cavalry.

We can seldom escape from the enemy's aviation except by night movements.

Against enemy cavalry, the most highly recommended procedure -- a procedure treated at great length in the pre-war German regulations -- consisted in placing in contact with the enemy a curtain, under shelter of which displacements of forces are made. The system was applied on a large scale on the French front during the campaign of 1918. In this case, of course, we used, not a curtain, but a stabilized and solid front. However, the development of units furnished with means of rapid displacement; cavalry, infantry, cyclists or infantry carried in trucks, porte artillery, doubtless will enable us, in the future, to rapidly constitute extended curtains. These curtains, of course, will be incapable of a prolonged resistance but will nevertheless be capable of blinding the adversary during the time necessary for the transformation of the disposition.

CHAPTER VII

CONCEPTION AND DEVELOPMENT OF THE MANEUVER.

THE INITIAL PLAN

B We can now say that the conception of the maneuver is nothing else than the choice of a maneuver procedure.

The bases of this choice are always the elements of the decision such as we have considered them in Part One, the mission, the terrain, the enemy front compared with ours, the attitude of the adversary.

The mission most often comes in as a limitation of choice among the various maneuver procedures, through the fact that it imposes the obligation of acting in a determined direction and under determined obligations.

As regards conditions concerning the terrain and the enemy, we have shown their relations with the different maneuver procedures. From these relations we can easily deduce their influence on the decision to be made.

From the fact that each procedure has its preparation and its special preliminaries, it results that we cannot separate preparation from execution in an initial plan. To form a plan of maneuver, therefore, means conceiving a maneuver that is complete from start to finish. This does not mean that the plan can or should be developed as it stands; it means simply that, at each moment, it is complete and that the commander sees, at least under a certain hypothesis, his maneuver as a whole.

Nor does this mean that the maneuver should be set up entirely in advance. Maneuver can be effected only by a series of successive operations which must be treated one after the other, for it is indispensable that we succeed in the first operation before passing on to the second. But, for the commander, the operations do not purely and simply add themselves to one another; they are concurrent and they form part of a single ensemble.

We have attempted to determine the conditions of the situation favorable to a given plan of maneuver. Naturally, an actual situation never exactly fits into a foreseen scheme. In each situation, several plays are possible and this is the more so as we have seen that the commander can influence the general situation and modify it in a sense favorable to the success of his projects.

AT WHAT MOMEMENT SHALL WE DECIDE?

At what moment shall we get up the plan of maneuver? The sooner the better.

What made the great commanders mighty was that they always had a plan. Who has not admired the rapidity of decision at Lutzen?

As soon as Blucher's presence to the west of Pegan is reported to him, he does not even take time to reflect; he immediately dictates his orders and a few minutes later, the whole French army is on its way to attack Blucher in front and flank at the same time (Sketch No. 67).

Are we in presence of an improvised decision in this case? If it really was improvisation, how can we explain that six corps marching east instantly change direction and turn toward the southeast without the slightest incident? There was a problem, though, that presented difficulty indeed; witness the change of direction of the Third and Fourth German armies at the end of August, 1870.

It was evidently not through simple chance that the French army was echeloned with its left in advance and was able to face so easily to the right. Nor was it by chance that the head echelon had taken its direction in such a way that Blucher's army was always to the right of this direction -- a detail that had its importance, because the echeloning of the army would have been of absolutely no value if it had been necessary to face toward the left and not toward the right.

In reality, the French army had been marching in that formation since its departure from the Main and, for several days, Napoleon had been watching for the favorable opportunity. The whole secret of his rapidity lies in that

We could easily find similar examples in the campaign of 1918.

No doubt it is not always possible to conceive a plan of maneuver so far in advance. But history, from start to finish, shows us that passiveness of mind is the greatest danger -- a danger against which we must struggle with all possible means if we do not want to be caught unaware. We should, at least, fix in advance the eventualities upon which we count for coming to a decision. In this way we may make a conditional decision, i.e., set up a maneuver suitable for the case in which the enemy remains in the situation shown by the first information.

ADAPTATION OF THE PLAN OF MANEUVER.

We know that to a given type of maneuver corresponds a normal chain of operations, a line of conduct traced in advance, in a way, from the commencement to the end.

All may be finished once the plan has been arranged, if the enemy does not react, or if he reacts only in a sense acceptable to the development of the maneuver.

It is in this manner that battles such as Bautzen, Sadowa or Saint-Privat arrived at the issue almost without a new intervention of the supreme command.

Such cases, naturally, are rare.

The enemy may modify the initial distribution of his forces.

He may also displace his field of battle, forward, to the rear, or sidewards.

Finally, on his side, he may start a maneuver which will become decisive before our own.

Evidently all of these eventualities would more or less deeply modify the initial plan. First we must ask ourselves to what extent an adaptation of the plan is possible; we shall then examine the problem of a change of plan.

We have already had occasion to remark that we can distinguish two things in a plan of maneuver: a speculative idea, of a sort, and its realization on the terrain. An example will enable this distinction to be better understood.

On the battlefield of Eylan, Napoleon brought about a double envelopment grafted onto a direct attack. Now if we glance over the march graphic of the Imperial army (Sketch No. 86) it is easy to see that this idea of maneuver is preconceived from the beginning of the operation. It is this maneuver idea that governs all the movements of the army and, in particular, predetermines the form of the march disposition: a central column intended to lay hands on the enemy and two wing columns intended to come in on his flanks as soon as he shall have been fixed by the central mass.

Twice before Eylan was the final maneuver started: first at Bergfried, later at Landsberg. As soon as the enemy stops, we see the wing columns commence to close in on the probable field of battle; then, when it is determined that the enemy withdraws, the sheaf opens again and the march is resumed.

We see wherein lies the suppleness of the system. The maneuver idea is independent of the zone in which it will be effected. Whether the battlefield be Bergfried, Landsberg or Eylan, we will still have a frontal attack, aided by two flank attacks.

In a maneuver thus organized there is both something preconceived and something postconceived.

A pure and simple preconceived maneuver would have resulted in the French army's complete closing in on each of the fields of battle on which the Russian army stopped. A pure and simple postconceived maneuver would have consisted in marching the assembled army after the enemy and not detaching the wing corps charged with execution of the enveloping maneuver until after having definitely gained contact with the enemy. One or the other of these maneuvers probably would have failed: the first, because it would have closed in on an empty space, the second, because it could have been effected only much too late.

So, the idea proper only is preconceived by Napoleon. Its materialization takes form only later and upon the latest information.

Under these conditions, the maneuver presents a quite marked suppleness in adaptation and it can, up to a certain point, lend itself to the modifications that the enemy will bring into the situation.

We have taken Eylan as an example because it appears to be the most typical. But in the light of this example, it is possible to make the same distinction in cases where the thing is less evident at first sight. The maneuver at Lutzen, for example, could have been made to matter what the situation of the enemy in the quadrant southeast of the region in which the French army was. Likewise, at Saint-Privat, the enveloping movement arranged by von Moltke would have succeeded whatever might have been the situation of the Frénch army between Amanvillers and Roncourt.

This distinction between the pure idea itself and its realization is application even in the case in which the maneuver is reduced to its simplest expression,

Let us take, for example, a corps (one of several in line) moving to the attack of a halted enemy, and assume that the Corps Commander has been obliged, momentarily, to eliminate from his plan any idea of combination of directions. If his zone of attack is wide, he has the certainty that, once in contact, he will haveeto limit his first front of attack and choose a zone in which he will make his principal effort. He knows, moreover, on how much front he can seriously act. So, the fundamental idea of the maneuver will consist in making an effort, when he encounters the enemy, on a given front. The zone in which he will bring this idea into effect will depend on the terrain and consequently on the line in rear of which the enemy shall have halted.

This first distinction made, we can go still farther. There is nothing easier than to break up the terrain over which we advance into successive bands to each of which shall correspond a certain zone of principal effort. We shall thus have a directing idea for the movement of the second line troops and reserves, the placing of the artillery, etc..... We may even deduce from this the degree of precision to be demanded from the engagement; depending on whether or not a slight error in determination of the contact will risk displacing the future zone of principal effort. By proceeding in this manner, we shall constantly have a disposition adapted to events, and we shall not be subjected to the same surprises as we would be were we to simply push our troops straight ahead, passively waiting the moment of the enemy's fixing himself to make a decision.

TRANSFORMATION OF THE PLAN OF MANEUVER.

Whatever we may do, we cannot expect that the possibilities of adaptation of the plan of maneuver will be limitless. When the variations pass a certain limit, we are obliged to abandon the first plan and take up another.

We are warned of this necessity by the appearance of situations clearly opposed to those required for the success of the maneuver project adopted, Two cases may then present themselves: either the plan can be directly changed, or else it cannot be changed.

We have already cited the case of the maneuver of le Mans (Sketches Nos. 68 and 69). The primary idea of the Germans is a converging march on the advanced posts of le Mans. The adversary displaces himself; the converging attack has failed. But by opening out the corps, we can immediately contrive a new maneuver: a frontal attack by the two right corps, a flank attack by the left corps. It is indeed a new plan, different from the first; it can be put into effect immediately because the initial disposition can be easily changed in the sense required by the new maneuver idea.

But if the situation had demanded an enveloping maneuver upon the French left wing, it would not have been possible to effect it without a transition, for the ensemble of the disposition was too fully oriented toward the south. Moreover, space was lacking to slip the army toward the north as a whole. It would have been necessary to stop the forward movement, bring the left corps back to the rear and have it "castle" (chess term --Tr.) toward the right.

Likewise, the approach disposition at Lutzen would not have been able to immediately transform itself into a battle disposition if the enemy had shown itself on the left flank of the French army instead of appearing on its right flank.

Therefore, when we find ourselves in presence of a situation such that the initial plan clearly cannot be adhered to, two elements are to be considered:

1st -- The maneuver procedures the new situation would require and their relative value.

2nd -- The possibilities left by the state of advancement of the primary maneuver.

Depending on the greater or lesser pressure of the time element, we will devote more or less consideration to these two necessities.

When confronted by an active enemy, there naturally is little possibility of carrying through a maneuver from start to finish without making modifications in it, sometimes even without a change of plan on the way. Although this eventuality is always disagreeable -- a little while back we stressed the inconveniences of too frequent changes -- we must thoroughly realize that an operation of some duration is not habitually the pure and simple development of the initial plan. If we examine the campaigns of Napoleon from this point of view, we often see maneuver projects succeed one another so rapidly that we sometimes have the impression that this or that campaign is a series of failures in maneuvers, the last only of which succeeded.

We have already seen something similar in the maneuver of Eylan which, initially, was to be an attack against the left flank of Benningsen (who was being kept busy by Bernadotte) and which, as a result of the extrication of the adversary, had to be changed into a direct pursuit.

But in the case of an active adversary, the phenomenon may take up a much faster gait. To bring this out, let us rapidly glance over the maneuver of Castiglione (July-August, 1796).

At the end of July, 1796, the French army is distributed in the quadrilateral: Brescia -- la Corona -- Legnano -- Mantoue (Sketch No. 87). Massena (15,000 men) is echeloned between la Corona and Verone; Despinoy (6,000) is at Peschiera and Verone. Angereau (5 to 6,000) is between Legnano and Ronco; Serurier (12,000) is besieging Mantoue; Sauret (4,000) is at Salo and Bavardo; Kilmaino, with 3,000 cavalry, is near Villafranca.

The Austrians attack on July 29th; Quasdonowitch, with 18,000 men, upon Brescia and Salo; Wurmser, with about 25,000 men, between the lac de Garde (Lake Garda--Tr.) and the Adige; Meszaros, with 5,000 on Verone.

On arriving at Verone on the morning of the 29th, Bonaparte is informed that the enemy has shown light troops in front of Verone and that Massena's advanced posts have been attacked at la Corona. He orders Angereau to advance on Montebello to attack Meszaros and orders his available troops (Despinoy, Kilmaine, Massena's reserves) to assemble between Castelnovo and Verone.

The situation, however, becomes serious very quickly. The Verone garrison holds out; but Massena commences a retrograde movement. Angereau's movement is countermanded (Sketch No. 88); he is given orders to come back toward Roverbella and Villafranca. Serurier is asked to send beyond the Po all the artillery not necessary for the siege and to consult together with Angereau at Castellaro. However, Bonaparte still hopes to take the offensive against Wurmser and on the evening of the 29th, reconnaissances are made with a view to an attack to be executed the morning of the 30th.

But, on the 30th, Wurmser forestalls us and throws Massena back on Castelnovo. In addition, Bonaparte learns that Sauret has lost Salo and has come back to Desenzano. He abandons his project of battle at Castelnovo and decides (Sketch No. 89) to place himself along the Molinella in order to cover Mantoue: Sauret and Despinoy will march immediately on Salo to retake that point; Massena, with 10,000 men, will establish himself behind the Mincio; Kilmaine, with various detachments forming a total of about 10,000 men, will move to Roverbella; Angereau will turn back toward Castellaro from Roverbella; Serurier will send some reinforcements to Angereau. A most stormy interview between the two generals takes place at Roverbella. Bonaparte finally pulls himself together and decides to march on Brescia to "crush Quasdonowitch and resume his line of operations." Sauret will hang on at Salo;

Massena and Despinoy will march on Lonato; Kilmaine and Angereau, on Monte-Chiaro and Brescia; Serurier will raise the siege of Mantoue and go to Marcaria with 5,000 men, the rest of his troops under orders of Angereau (Sketch No. 90).

The movements commence on the afternoon of July 31st and on the evening of August 1st the advance guard of the French army enters Brescia. The main body, exhausted by fatigue, is along the Chiese; the rear guards abreast of Castiglione. Luckily, Wurmser does not follow the French army, and serenely continues his movement on his original objective, Mantoue.

On August 2d, the situation is far from being clear as regards Quaddonowitch; also, Wurmser's advance guard has crossed the Mincio and thrown back our advance guards at Castiglione on Montechiaro. Bonaparte hesitates a moment at entering the jaws of the vise. Pushed along by Angereau, however, he decides to do it and he orders (Sketch No. 91) Guyeux, Despiony and Herbin to advance on Gavardo (on August 3d) to finish off Quasdonowitch, while Massena will march on Lonato and Angereau on Castiglione.

On the 3d we have partial successes at Lonato and Castiglione, but the operation against Quasdonowitch has not been satisfactory. It is resumed the 4th, while Massena and Angereau join forces in the plain of Castiglione, ready to resist Wurmser who has at last just succeeded in assembling the main body of his forces there. (Sketch No. 92).

On the evening of the 4th, Quasdonowitche's affair is settled. Bonaparte at once brings back to himself half the forces operating in that region and, in addition, calls Serurier into battle (Sketch No. 93).

The battle of Castiglione is on August 5th and on the 6th the French army comes up to the Mincio, which is reached by Massena at Peschiera and Angereau at Borghetto. Angereau fails but Massena succeeds and the main body of the army follows after him (Sketch No. 94).

Bonaparte, of course, is still at the beginning of his career and in this operation we do not find the calmness that we note in the later maneuvers of Jena and Bautzen. But Bonaparte is already Napoleon and we see it fully in the clearness of his successive plans. Even when they are only roughly blocked out, as in the case of the riposte to Wurmser's first attack or the battle on the Molinella, it is easy to extend them in one's thought and divine the anticipated conclusion.

But the events are so unstable that none of these plans "fall due" and that it is necessary, at almost each moment, to orient the maneuver on new bases. It always has been and always will be more or less like this in the case of every operation in which we are dealing with an enemy making an active display of his will.

12-19-24/bmmd

Therefore, we must not consider ourselves as being absolutely tied to the initial plan when it is proven that this plan no longer gives any chance of success.

In pleading the right of the commander to abandon a plan that has obviously become useless, we do not deceive ourselves concerning the disadvantages inherent in any change of plan. By the force of things, all these changes are looked on unfavorably by the executants.

The maneuver of a large unit is not a simple act. It is an aggregate of small individual maneuvers, each of which also constitutes a whole and which must be organized, prepared and developed following the same rules as the large one. There is therefore, at each instant, a certain number of subordinate operations in the process of being born or in course of execution.

A complete change of plan obliges us to set everything back at the beginning and make a fresh start. Adaptation of means, even adaptation of minds cannot be immediate. There are inevitable frictions that we must take into consideration and which limit the possibilities of changes. Despinny groans, Angereau rages, Massena sends in his resignation. Confidence of the subordinates would surely go to pieces if it were put to too many tests. But it is necessary to add that they, for their part, must make some sacrifices, must realize that the pilot is doing the best he can, and that it is better for him to give sudden turns of the wheel rather than to let the vessel drift against a reef.

THE EXPRESSION OF THE PLAN OF MANEUVER.

Should the plan of maneuver be communicated to the subordinates by the commander?

Studying the methods of command of Marshal von Moltke in 1870, Marshal Foch writes:

"Moltke thought he could provide for everything, by commanding from day to day as in 1866, or by regulating, himself, the movement of the corps. For the directives and general instructions demanded by Steinmetz,....., for the long letters of Napoleon to his marshals, he substituted brief telegrams. The facts show that this manner of acting was wrong.

This is because, in reality, commanding has never meant being mysterious, but has meant communicating, at least to the immediate subordinates, the thought animating the high direction.

If anyone ever was entitled to be mysterious it was Napoleon -- an unquestionable authority -- who assumed the task of thinking and deciding for his entire army. However, we have already noted how, in his correspondence, he set forth his views and his program for several days to his corps commanders. If we recall many of his proclamations we shall see that in them he initiates his troops into the maneuver.

Souvaraf has said: "Each soldier must know his maneuver", he being convinced that one can obtain everything from troops to whom one speaks, because they then know what is asked of them, and they ask nothing better than to give what is asked of them."

The exact degree to which the commander should communicate his intentions to his subordinates cannot be made the subject of a theoretical study. It is a question of circumstances and often a question of persons.

THE PLAN OF INFORMATION

We have tried to bring out, in the case of each maneuver considered, the conditions of the situation propitious for its development.

Once the plan has been chosen, it is important for us to assure ourselves that the general situation remains favorable for the maneuver that is underway.

We have seen that the basic information regards the terrain, the front and the attitude of the enemy. The terrain is given us by the map; therefore there remain to be watched only the questions of front (1) and of attitude. It is these two points that should particularly attract attention in proportion as the maneuver develops, and this will constitute the first directive.relative to the plan of information.

In the second place, our disposition having a certain maneuver in view it will, of course, have some weak points. If, for example, we have contrived an attack upon the enemy's flank, it is probable that we shall be in a poor situation as regards the opposite wing. In other words, our plan offers the enemy the possibility of one or two particularly dangerous maneuvers. It is these possibilities which we must determine and this will be the second point of view at which we must place ourselves to give directives concerning the securing of information.

We see that at this moment we consider only the directives concerning the maneuver properly so called. It should remain understood that all other information concerning the enemy should be gathered and communicated to the commander as rapidly as possible.

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(1) Naturally it would be preferable to know the strength of the enemy. But, if it is impossible to know this, the extent of the front already gives us considerable information. We know, as a matter of fact, the maximum front on which we can ourselves act; it is sufficient, then, to know whether the enemy front is greater than, equal to or less than our maximum front.

CONCLUSION

The study of causes is long ....

The art of war of which the whole world talks is a difficult art ....

Napoleon.

The Course in General Tactics at the Ecole de Guerre is chiefly an introduction to the study of the Military Regulations and an initiation into the comprehension of the facts of past wars. It is in these regulations and in these facts that we will find the final synthesis of the preceding studies.

As we have been able to note, we have not endeavored to consider, at the outset, all the real complexities of the problems. We have preferred laying out and studying a certain number of preliminary questions, so as to progressively restrict the field of our later discussions.

After having brought out the elements which, in a way, constitute the characteristic lines of a situation and a decision, we have taken up, as a point of departure, study of the direct, straight-ahead blow and of the simple parry, the attack and the defense of a position of resistance -- operations in which each of the two adversaries uses all the means he can put into action. Then we have tried to see the modifications it was advisable to make in the attack and defense procedures in the periods of less intense struggle which occur at the beginning and end of the combat.

We then attempted to view combat in its ensemble and to reconstitute its general evolution, first, in assuming that one of the two parties maintained the defensive, then, in considering the case in which the two adversaries attack.

Elementary technique having thus been established, we reached the problem of maneuver. First, we noted that the combinations used on the battlefield are always derived from the fundamental ideas bequeathed us by the past. Then we noted that all the acts constituting an operation are mutually interdependent and that maneuver consists of orienting all these acts, without exception, toward a final, predetermined goal.

We then endeavored to classify the different types of maneuver and to bring out the special physiognomy of each one by noting the conditions of the situation appropriate to its use and the conditions of preparation and development necessary for its successes. The problem of conception of maneuver was then found to be greatly simplified, and this conception has appeared to us, not as a mysterious operation defying analysis, but as a reasoned choice among a certain number of known and classified procedures.

But all these questions, which for necessities of studying we have been obliged to touch in succession, form, in practice, a homogeneous whole, a sheaf which is indissolubly linked together. The smallest problem brings them all up at once and we can solve it, and its variations, only by calling on both all of the science and all of the intelligence that we possess. The most simple action brings into play our entire being, all our faculties and all our experience.

Consequently, the training that the officers have been able to acquire at the Ecole de Guerre will produce all its fruit only in the measure in which they will be able to continue it and develop it in the future. To be profitable, this task should be simultaneously accomplished along two paths; one, study and reflection, the other, action.

What we should demand from study and, in particular, from the study of history, is not an always more or less hazardous appreciation of decisions, the real motives of which we will never know. What is of interest are the relations of cause and effect which may exist among the different events and also, the essential points, the springs -- often hidden -- upon which it is necessary merely to press in order to set an entire system into motion. Usually, we succeed in discovering them only through extended analyses, as a result of which we progressively eliminate the accessory facts in order to bring out those that dominate the others -- the "significant" facts.

v But reflection, study, discussion should be considered as only a means for arriving at action. We, therefore, must practice ourselves in acting, in training ourselves to see quickly and in rapidly making decisions -- simple decisions. "War being a difficult trade, all complicated combinations should be kept out of it." (Napoleon). We shall very soon perceive that simplicity thus understood is not an easy thing to bring into effect. We have a warnin that we are getting away from this simplicity whenever we find that we have to increase prescriptions of detail in order to develop and make understood our thought. When we find ourselves slipping on this, it is because the double task of analysis and synthesis that constitutes the decision, has not been performed with sufficient precision and care; we must start it over again from the beginning.

In the course of our study, we have been led to more particularly advocate certain points of view and certain methods of study for the reason that quite rigid progression and coordination are indispensable in instruction which is developed continuously over a period of two years. But all that is of value only in making a start. It is a scaffolding that should disappear when the building is finished. "After we commence to get the feel of affairs, we make light of theories and use them as do the mathematicians, not to move in a straight line, but to continue in the same direction." (Napoleon). Theory is only a means of avoiding useless schools, of gaining time in more quickly arriving at the conquest of our own personality. To go gather, to follow science for its own sake, would be taking the means for the end. The primordial end, the real end, is to maintain and develop vigor of mind, for what is necessary "in public, administrative and military affairs is a strong mind, deep analysis and the faculty of tirelessly going after things". (Napoleon).

12-19-24/bmmd

LIST OF HISTORICAL FACTS ANALYZED OR MENTIONED.

		Page of text	Sketch
. .	Battle of Cannae		58
	Battle of Leuthen		
1793	Battle of Neerwinden		78
1794	Battle of Fleurus		79
1796	Surprise at Dego		
1797	Battle of Rivoli		80
1805	Battle of Austerlitz		81,82
1796	Battle of Castiglione		66
1796	Maneuver of Castiglione		87,94
1807	Maneuver of Eylau		86
1809	Battle of Wagram		76
1812	Maneuver of Wilna		62
1813	Battle of Lutzen		67
1813	Battle of Bautzen		71
1815	Battle of Ligny		77
1859	Battle of Magenta		
1870	Lespart's division at Bitche		
1870	Battle of Saint-Privat		65
1871	Battle of le Mans		69,70
1871	Operations of the Army of the East		72
1904	Battle of Liao-Yang		
1904	Battle of the Cha-Ho		83
1904	Battle of Mukden		
1912	Advance on Adrianople and Kirk-Kilisse		70
1914	Maneuver of Tannenberg		74,75
1914	August 22d. The 4th Corps at Virton		57
1914	Battle of the Ardennes		84
1914	First battle of Guise		46 to 51
1914	Battle of the Marne		58
1914	September 9th, Battle of Fere-Champenoise		61
1915	May - June, Artois offensive		
1915	September 25th. Champagne offensive		
1916	Verdun. German offensives		17
1916	June 23d. Counterattack of the 114th Battalion of Chasseurs		40
1917	Attacks of April 16th		15
1917	Operations of the 6th Corps from April 16th to 21st		55,56
1917	Attack on the Moronvillers massif		16
1917	Battle of la Malmaison		52,53,54
1918	May 27th. Battle of the Aisne		12,18
1918	June 9th-11th. Battle of Matz		12,13,41, 42
1918	June 15th. Battle of Champagne		12,13
1918	July 15th. Outposts of the 43d Division		25 to 30
1918	July 18th-Chateau-Thierry--Soissons counteroffensive		18,60
1918.	July. Defense plan of the First Army		24
1918	August 8th. Battle of Montdidier		19,59 63,73
1918	September 28th. Battle of Champagne		19
1918	October 9-11th. Engagements of the 126th Division		26
1918	Second battle of Guise		64

12-19-24/bmmd

LIST OF SKETCHES

1 -- : The 31st Corps in front of the Bois de Mortmore at the close of 1914

2 -- : French and German trenches in 1916.

3 -- : Organization of machine gun fires in 1917.

4 -- : Support points.

5 -8 : Organization of the fires of a position of resistance. Influance of the terrain.

9 -- : Deciding on a position of resistance.

10 -- : The ensemble of a defensive disposition of a position of resistance.

11 -- : Influence of the profile of the terrain.

12 -- : Defensive fronts in 1918.

13 -- : Examples of defensive dispositions in 1918.

14 -- : Ensemble of an attack disposition of a position of resistance.

15 -- : The Aisne attack (April 16th, 1917).

16 -- : The Moronvillers attack (April 17th, 1917).

17 -- : German offensives at Verdun in 1916.

18 and 19: Fronts of attack in 1918

20 -- : Influence of terrain on the depth to be given to artillery fires.

21 and 22: Plan of conquest of the terrain

23 -- : Outposts

24 -- : Situation of the French First Army on July 21st, 1918.

25 to 30 : Outposts of the 43d Division on July 15th, 1918.

31 -- : Limits of range of guns of the defense.

32 -- : Deciding on directions of engagement.

33 -- : Gaining of contact by the cavalry.

34 -- : Gaining of contact by the advance guards.

35 -- : Verification of the value of the contact.

36 -- : The 126th Division from October 9th to 11th, 1918.

37 -- : Covering the withdrawal of the outpost.

12-19-24/bmmd

38 -- : Fires in front of the principal position.

39 -- : Limiting of a breach in the position of resistance.

40 -- : Counterattack of the 114th Battalion of Chasseurs, June 23d, 1916.

41 -- : Battle of Matz (June 1918).

42 -- : The counterattack of June 11th, 1918.

43 -- : The attack (1st phase)

44 -- : The attack (2d phase)

45 -- : The exploitation and the pursuit.

46 to 51 : The first battle of Guise (1914)

52 -- : Battle of la Malmaison, Attack disposition and equipment of the front.

53 -- : La Malmaison. Deployment of the division artilleries.

54 -- : La Malmaison. Plan of action of the infantry.

55 and 56: The 6th Corps from April 16th to 21st, 1917.

57 -- : The 4th Corps at Virton (August 22d, 1914).

58 -- : Cannae and the Marne.

59 -- : Battle of Montdidier (August 8th, 1918).

60 -- : First plan of attack of the Tenth Army (July 1918)

61 -- : Battle of Fere-Champenoise (September 9th, 1914)

62 -- : Advance on the Niemen (1812)

63 -- ::Battle of Montdidier. Sketch of the attack disposition.

64 -- : Second battle of Guise (1918).

65 -- : Battle of Saint-Privat (August 18th, 1870).

66 -- : Battle of Castiglione (August 5, 1796).

67 -- : Battle of Lutzen (1813)

68 -- : Advance of the German Second Army on le Mans.

69 -- : Battle of le Mans (January 1871).

70 -- : Advance of the Bulgarian armies on Adrianople and Kirk-Kilisse.

71 -- : Battle of Bautzen (1813).

72 -- : Operations in the East in January, 1871.

12-19-24/bmmd

73 --:The French left wing at the battle of Montdidier.

74 and 75:Tannenberg (1914)

76 --:Battle of Wagram (1809)

77 --:Battle of Ligny (1815)

78 --:Battle of Neerwinden (1793)

79 --:Battle of Fleurus (1794)

80 --:Battle of Rivoli (1796)

81 and 82:Battle of Austerlitz (1805)

83 --:Battle of the Cha-Ho (1904)

84 --:Battle of the Ardennes (1914)

85 --:Sketch of the principal types of maneuver.

86 --:Maneuver of Eylau (1807)

87 to 94-:Maneuver of Castiglione (1796)

12-19-24/bmmd

TABLE OF CONTENTS.

Page

PART ONE -- THE ELEMENTS

CHAPTER I -- THE ELEMENTS OF THE DECISION OF THE COMMANDER. Principles variables of a situation.............................

CHAPTER II - THE MISSION ....

CHAPTER III- THE MEANS OF ACTION. Infantry and Tanks, Artillery, Cavalry, Air Service, Engineers, Large Units ....

CHAPTER IV - THE TERRAIN. The terrain and fire. The terrain and movement. Method to follow in studying the terrain..............

CHAPTER V - THE ENEMY. Strength, attitude, value of the contact, possibilities.........

CHAPTER VI - VALUE OF THE TROOPS. Instruction. Officers and non-commissioned officers. State as regards morale. Evolution in morale during the course of a war. Crises of morale..........

CHAPTER VII- THE COMMAND. Knowledge. Organization. The Command. Character..............

CHAPTER VIII GENERAL SCOPE OF A DECISION. Study of the mission and of the situation. The decision as a whole. Use of troops. Plan of information. Plan for use of the services........................

PART TWO -- THE COMBINATION OF ARMS

CHAPTER I -- COMBINATION AND LIAISON. Necessity of distinguishing between these two things..........................

CHAPTER II - DEFENSE OF A POSITION OF RESISTANCE. Fire, Disposition for resistance; its evolution during the war. Influence of terrain. Influence of the front of action. Organization of the field of battle. Plan of defense of the principal position; roles of the Division and of the Corps...........

CHAPTER III- ATTACK OF A POSITION OF RESISTANCE. The problem. Superiority of fire. Disposition for attack. Influence of terrain. Plan of conquest of terrain. Influence of the front of action. Plan of attack of a position of resistance; roles of the Division and of the Corps..............................

Page

CHAPTER IV -- THE PRELIMINARIES OF DEFENSIVE COMBAT. Covering of the position of resistance. Outposts; disposition; mission to be assigned them. Outposts during the war. Other covering dispositions.....................

CHAPTER V -- THE PRELIMINARIES OF OFFENSIVE COMBAT. AGAINST AN ENEMY IN POSITION. How to attack a covering disposition. Differences from the attack of a position of resistance. Choice of directions of engagement. Approach, gaining of contact, engagement; respective roles of the Division and of the Corps.....

CHAPTER VI-- DEVELOPMENT OF DEFENSIVE COMBAT. Principal phases of the resistance. Counteroffensive: immediate counterattacks, ensemble counterattacks, general counteroffensive. Breaking off of combat and retreating maneuver..................................

CHAPTER VII- DEVELOPMENT OF OFFENSIVE COMBAT AGAINST AN ENEMY IN POSITION. General aspect of combat. Evolution in the idea of surprise during the war. The incidents of combat: start of the attack; checks; parries against enemy counterattacks. Explcitation and pursuit. Air Service in battle...............

CHAPTER VIII- OFFENSIVE AGAINST AN ENEMY IN MOVEMENT: Special characteristics of offensive combat against an enemy in movement. Engagement by surprise. Engaging of troops brought to the field of battle by trucks ....

CHAPTER IX -- THE ATTACK OF A FORTIFIED FRONT. Elements of the plan of attack. Battle of la Malmaison. Operations of the 6th Corps from April 16th to April 21st, 1917 ....

CHAPTER X -- SECURITY. Command security and troop security. Security dispositions. Constituting security detachments. Security and risk.................

CHAPTER XI -- GATHERING AND INTERPRETING INFORMATION: Its importance. Hypothesis and preconceived idea. Directives to be given by the commander. The unknown, security and action..................

PART III -- THE MANEUVER

CHAPTER I -- THE PROBLEM. Necessity for study of the maneuver. Method of study .....

Page

CHAPTER II -- THE ELEMENTARY COMBINATIONS. Combinations of divisions. Choice of a zone of principal effort. Measuring out of efforts during the course of combat........................

CHAPTER III - DECISIVE ACTION AND UNITY OF COMBAT. First system: preparatory combat and decisive attack. Second system: immediate general attack. Material action and action on morale. Decisive point and decisive moment. Maneuver contrived in advance. System of successive actions: economy of force..............................

CHAPTER IV -- WING MANEUVERS. Converging attack. Enveloping movement. Frontal attack combined with flank attack. Flank attack. Security in the wing attack. Welding of the wing attack..........

CHAPTER V -- CENTRAL MANEUVERS. Maneuver on interior lines. Rupture of the front by a central attack. Dislocating actions.........................

CHAPTER VI -- PREPARATION OF THE MANEUVER. Object of preparatory actions. Action on the front and attitude of the enemy. Action of attrition. Disposition preparatory to the maneuver.........

CHAPTER VII --CONCEPTION AND DEVELOPMENT OF THE MANEUVER. Choice of the plan of maneuver. Adaptation of the plan of maneuver. Change of plan. Plan for information...................

CONCLUSION.......................................

LIST OF HISTORICAL FACTS ANALYZED OR MENTIONED....

LIST OF SKETCHES.................................

(Rambouillet -- Imprimerie Pierre Leroy, 44 Rue Nationale)

12-19-24/bmmd

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Lemoine,
General tactics

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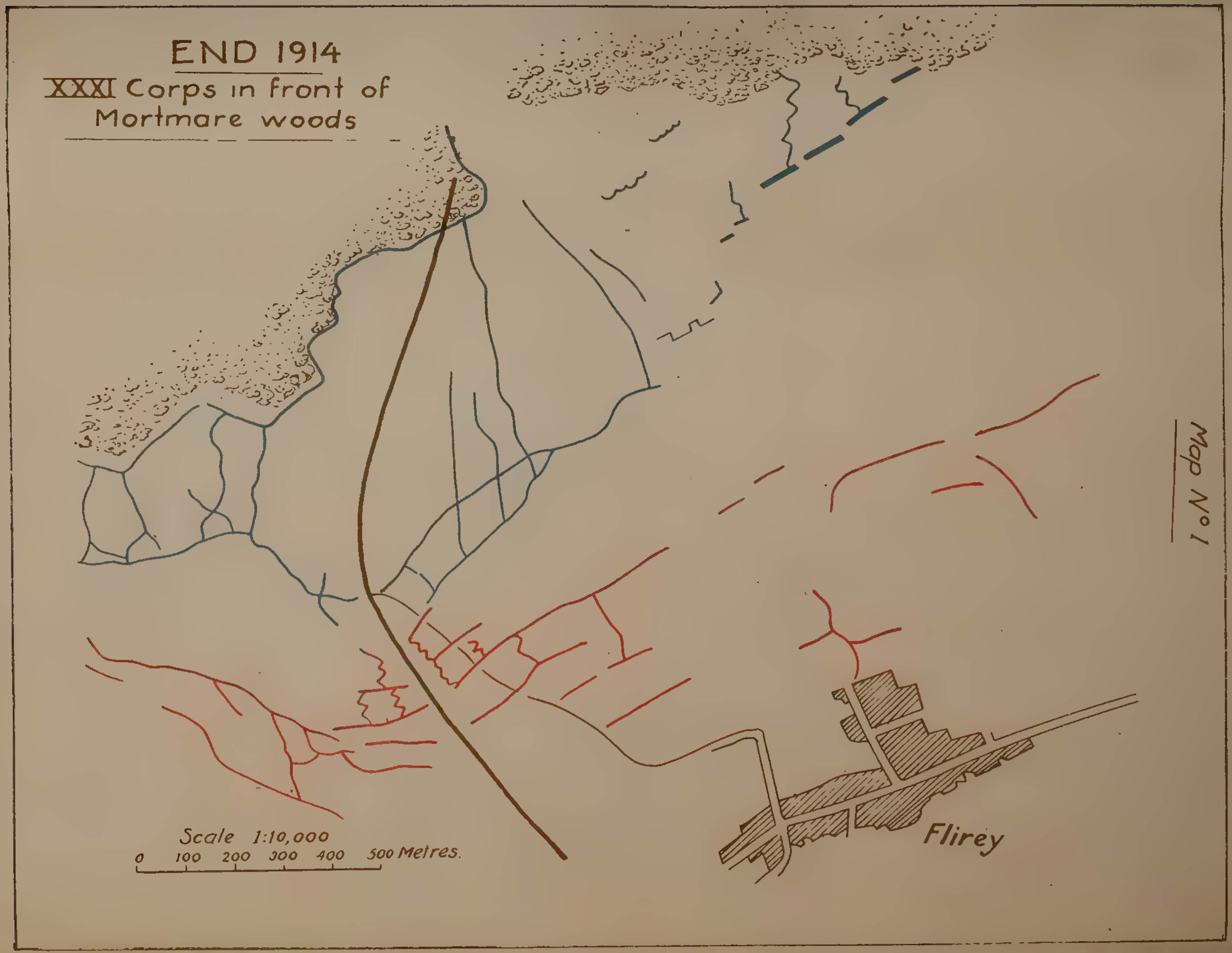
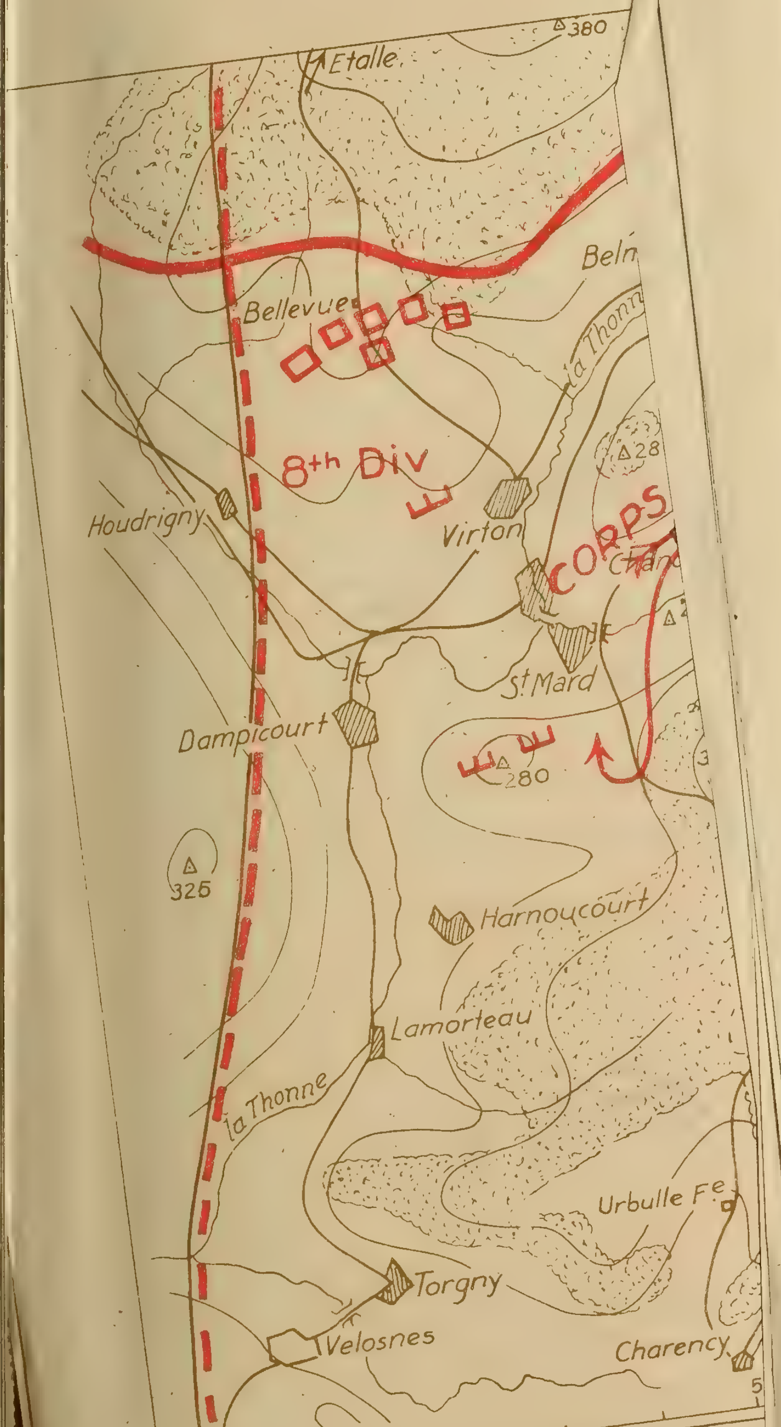


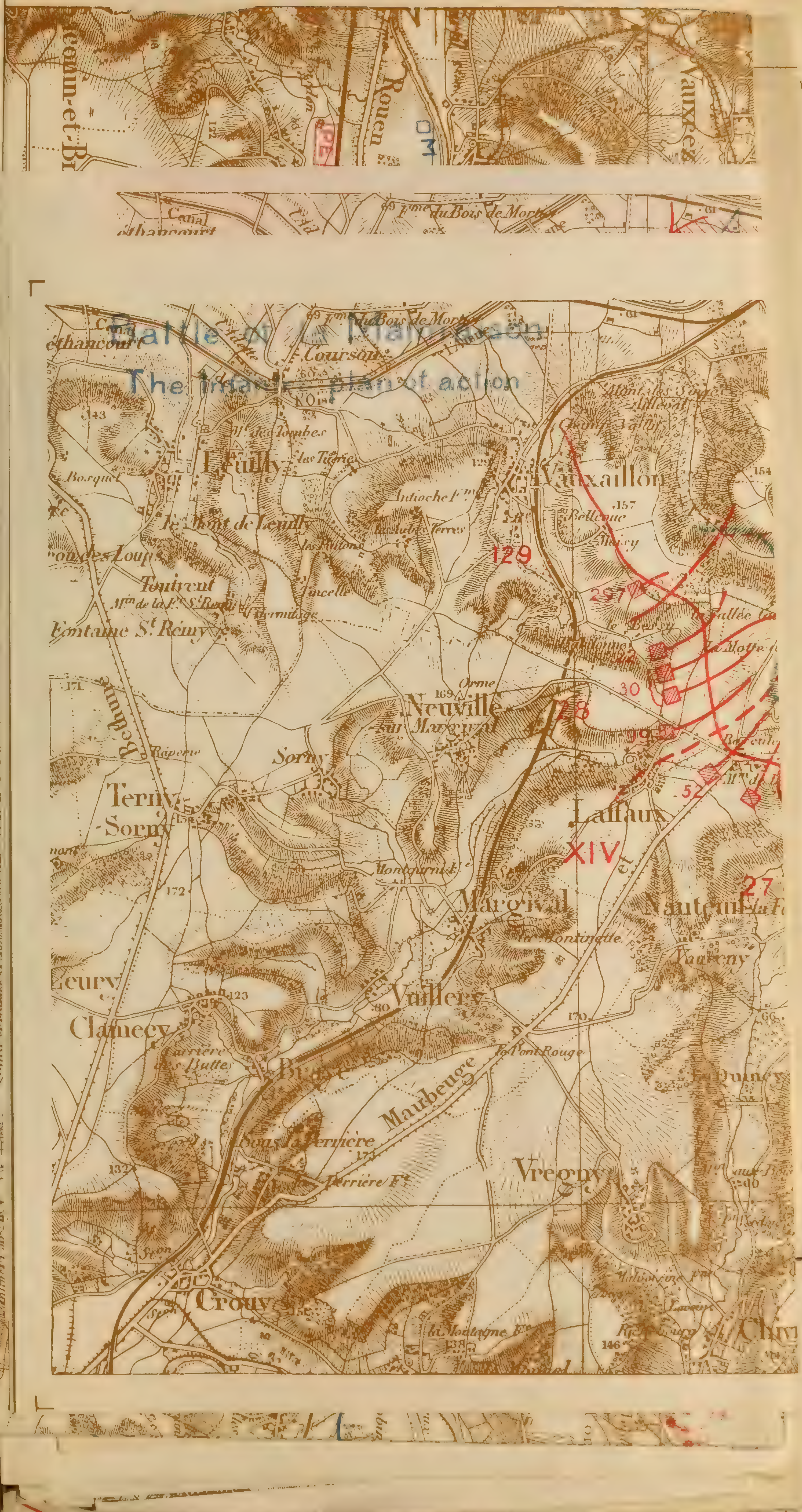
END 1914

XXXI Corps in front of Mortmare woods

Map N

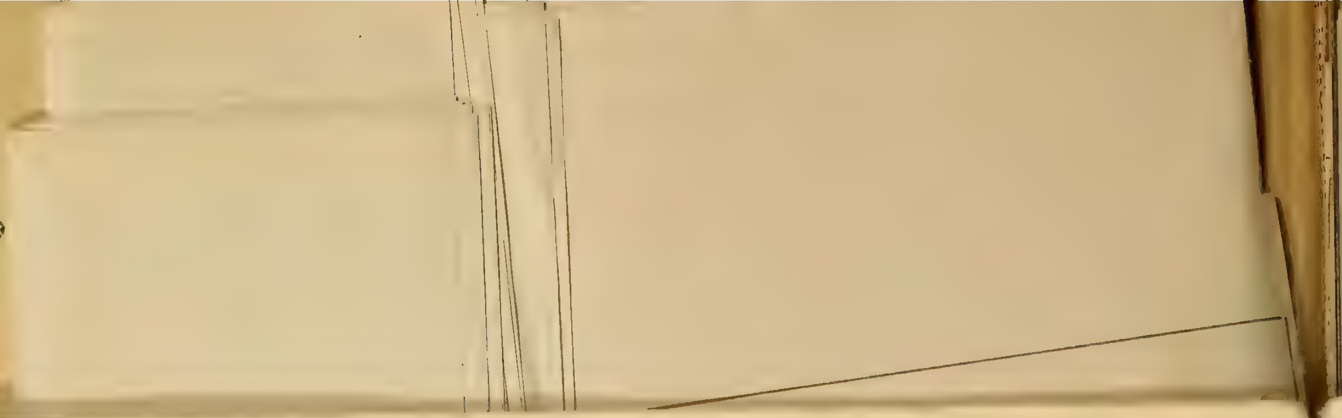
IV Corps at Vir





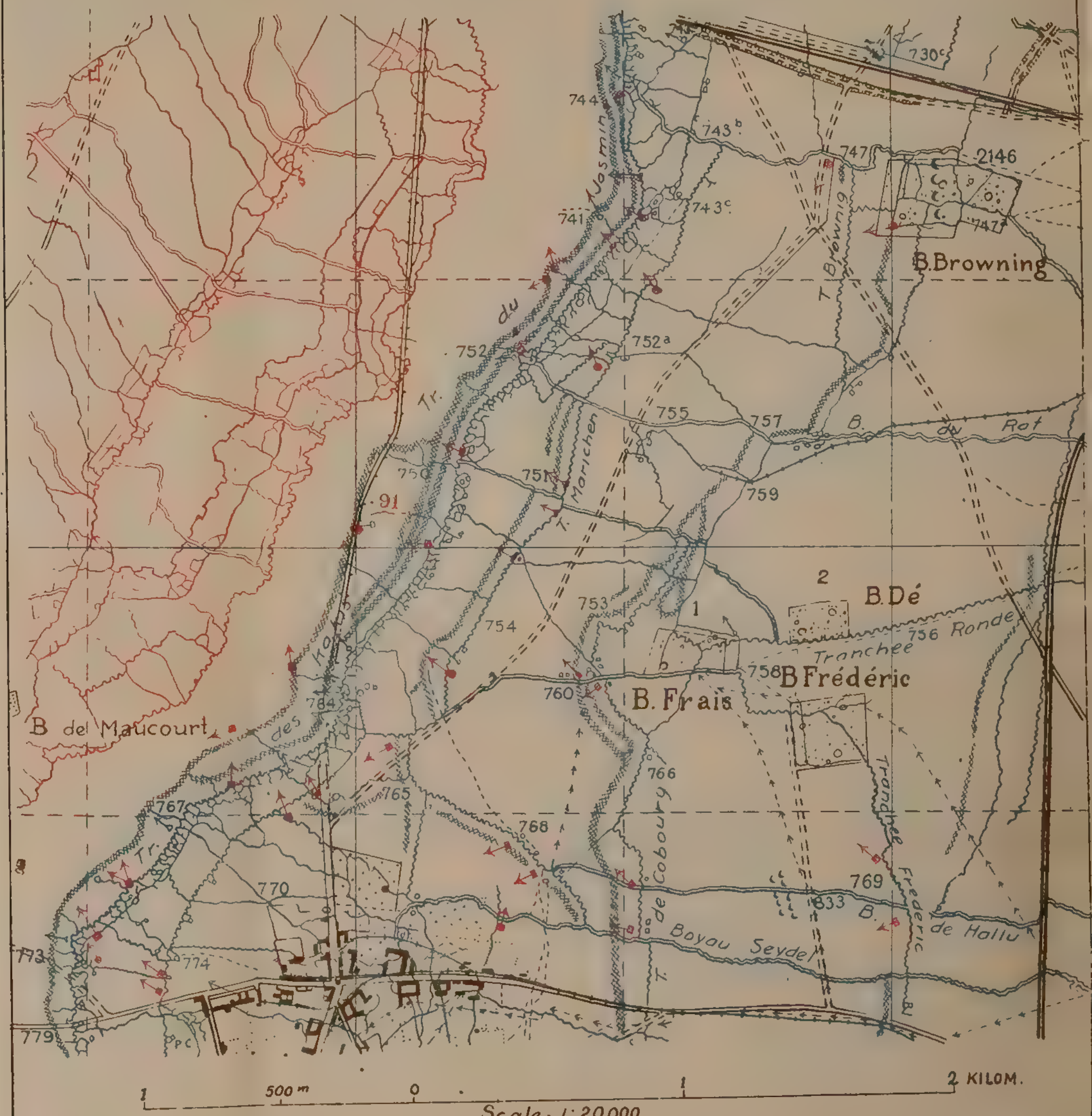
Battle of La Malmaison

The infantry plan of action



Map N° 2

French and German trenches in 1916



No's 15 and 16

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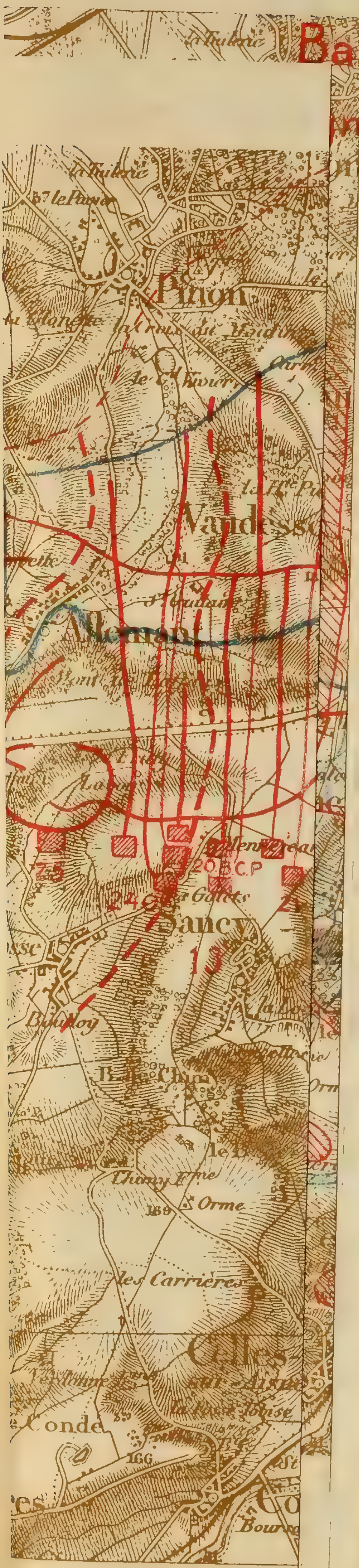
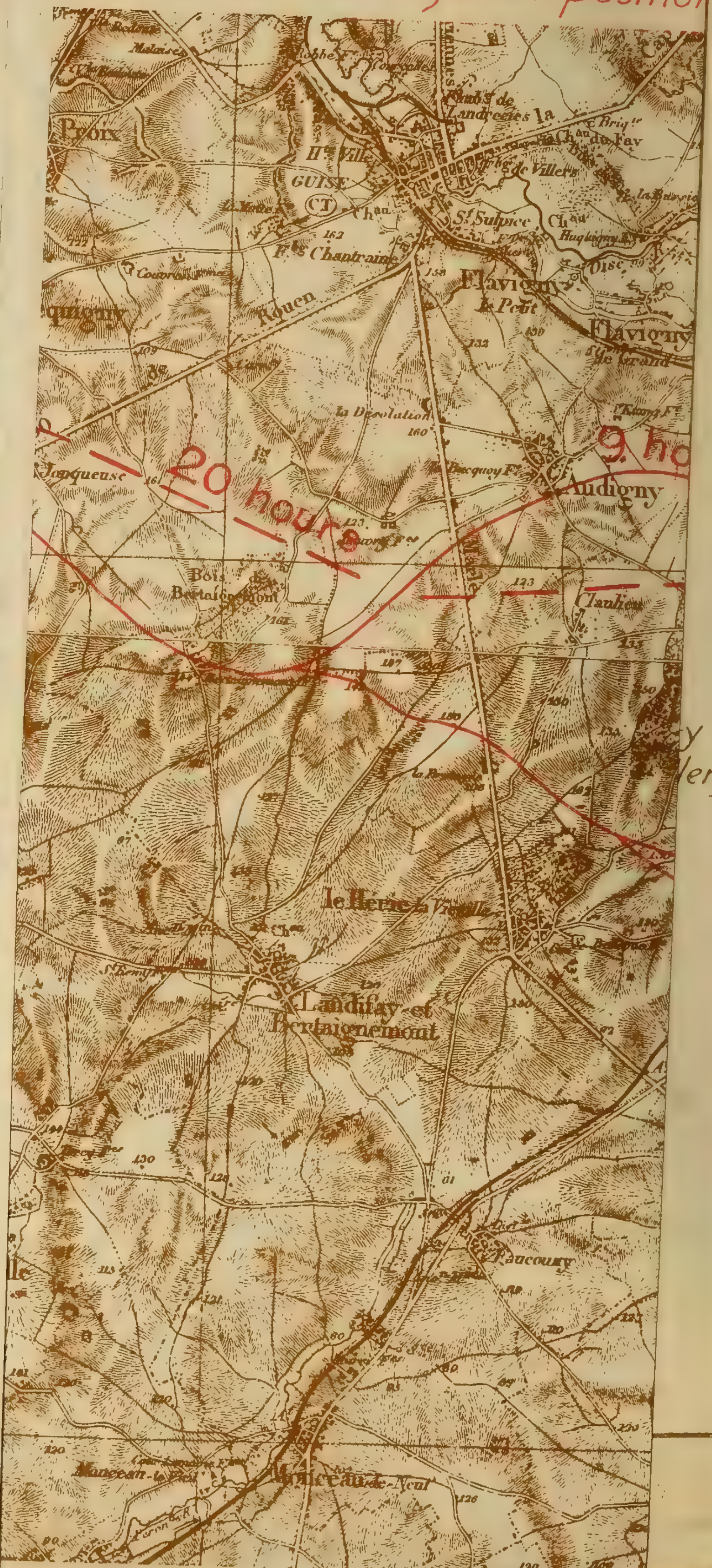
NS FOR THE ATTACK
OF RESISTANCE



First battle
Changes of positio



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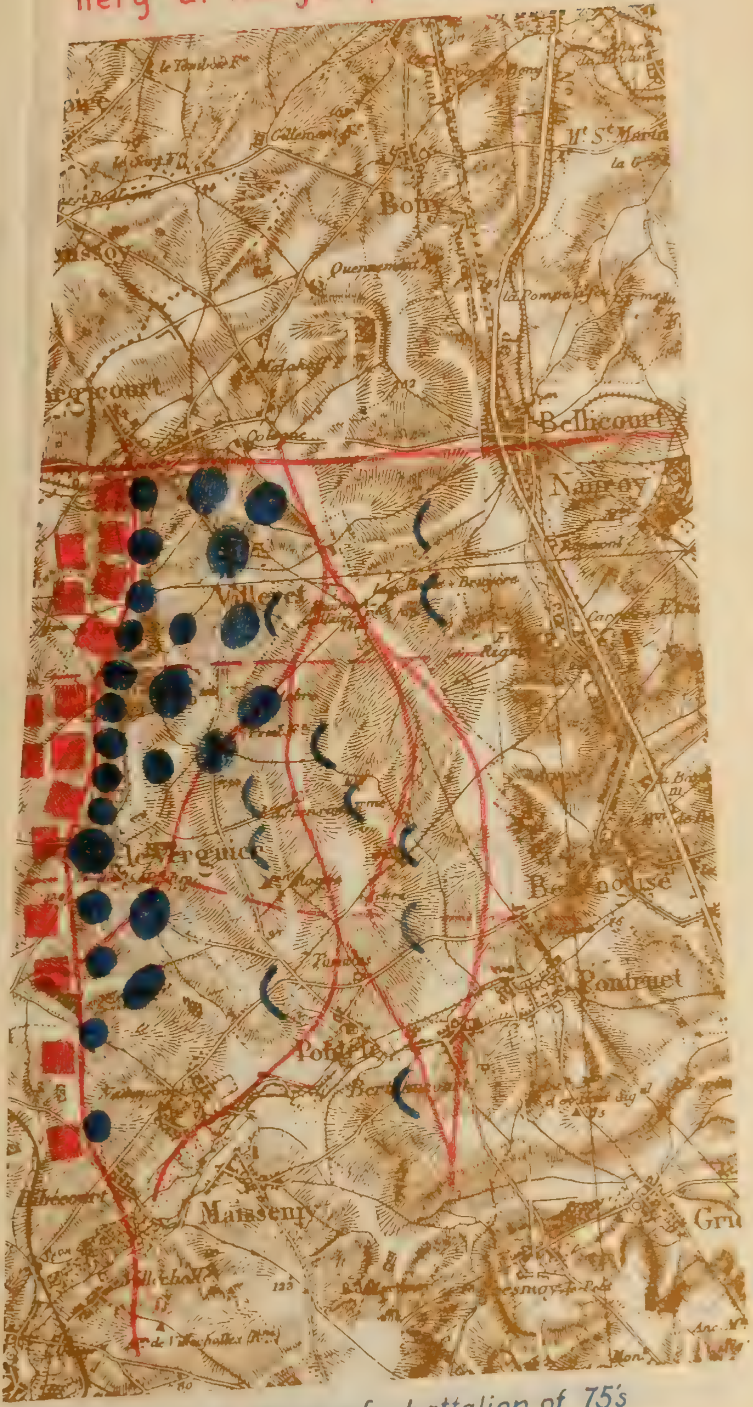
ase)
llery at the jump-off.



● Fires of a battalion of 75's

● Fires of a battalion of heavy artillery

(Counter battery

e 1:80,000

n A

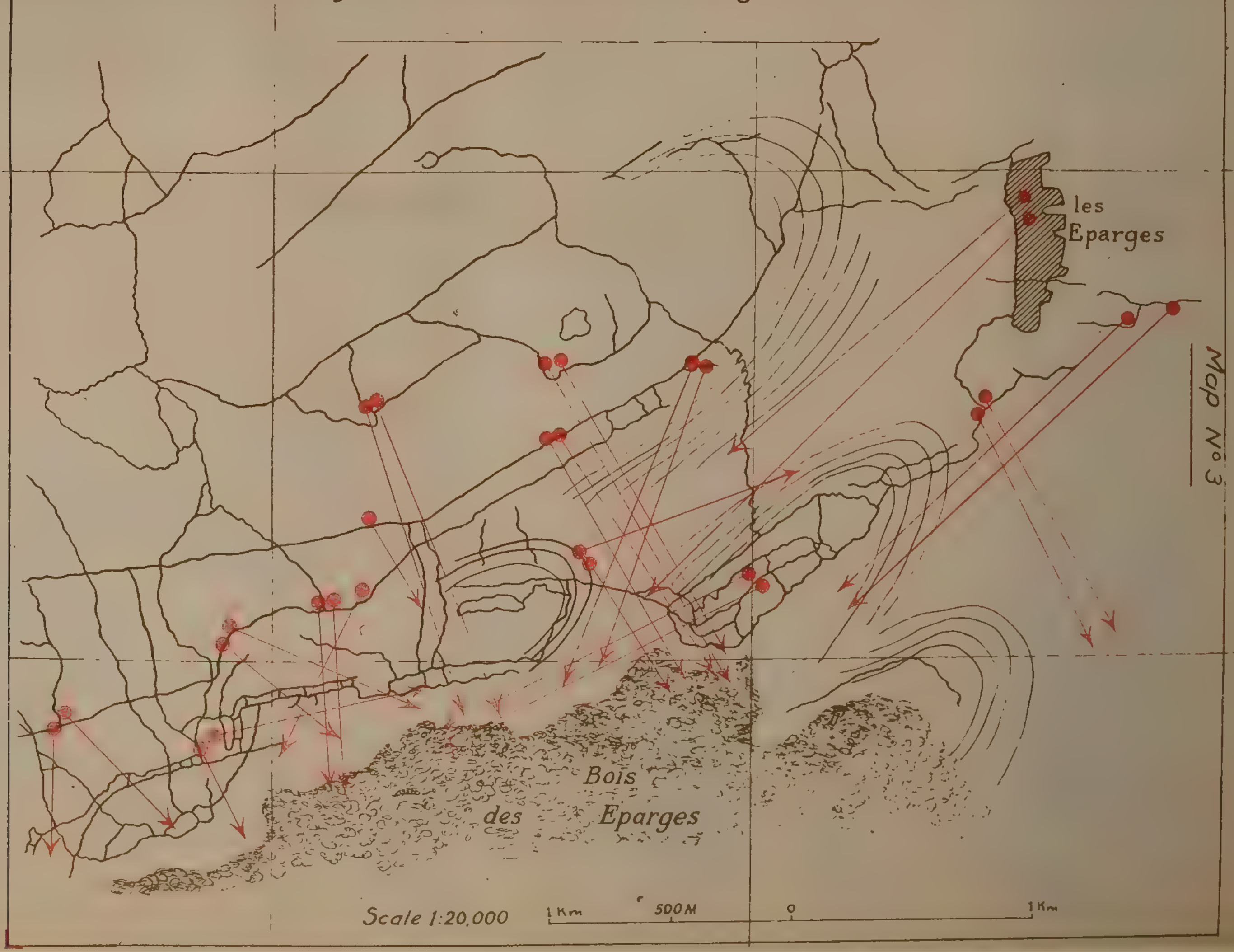
est

Anvi

53

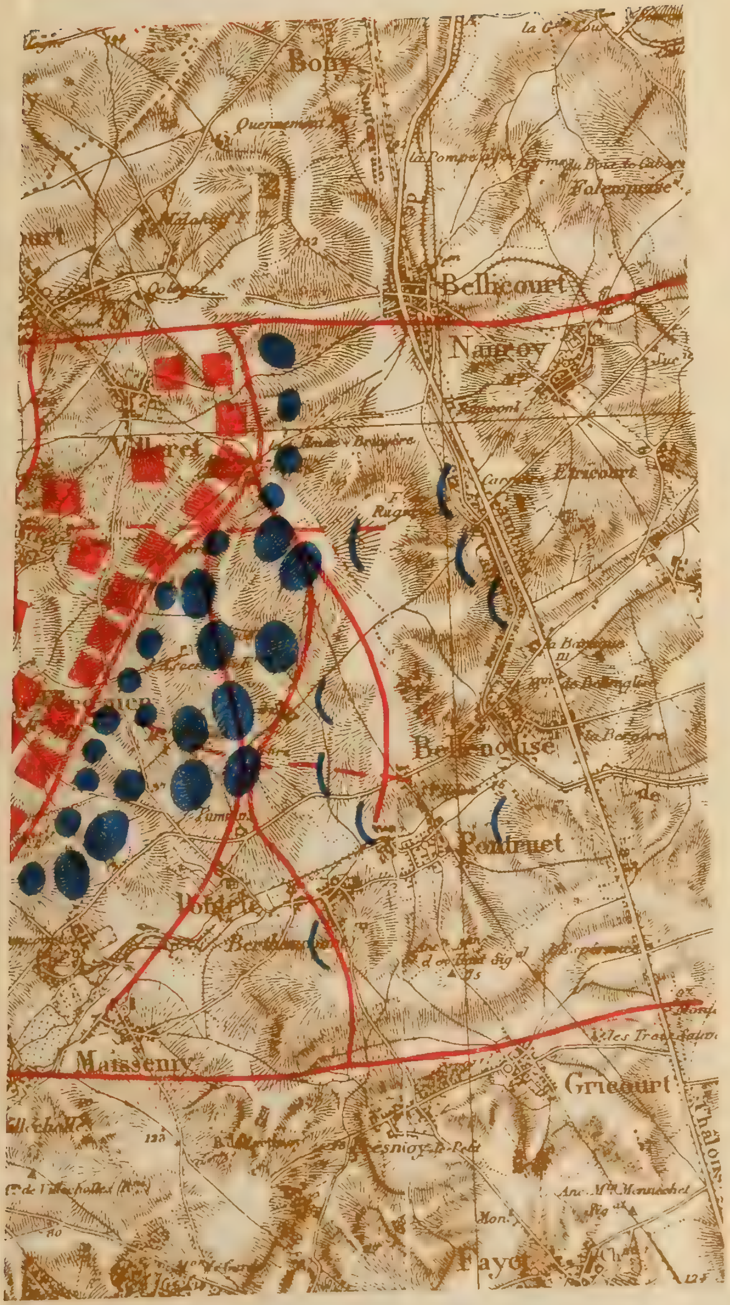
90
126
120

Organization of machine gun fire in 1917

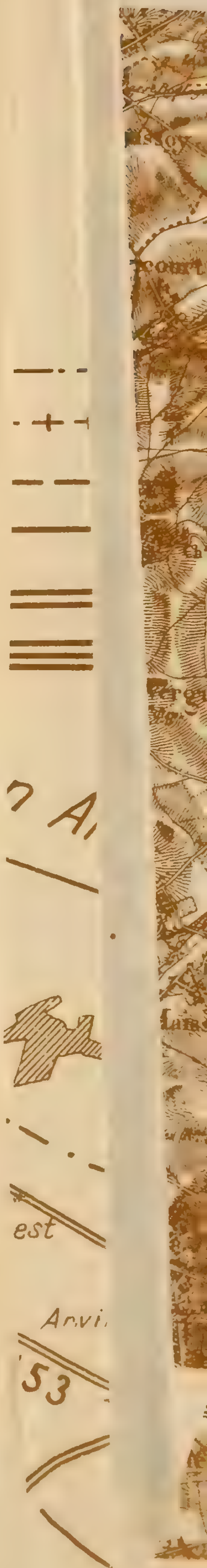


/º 44

2nd phase)

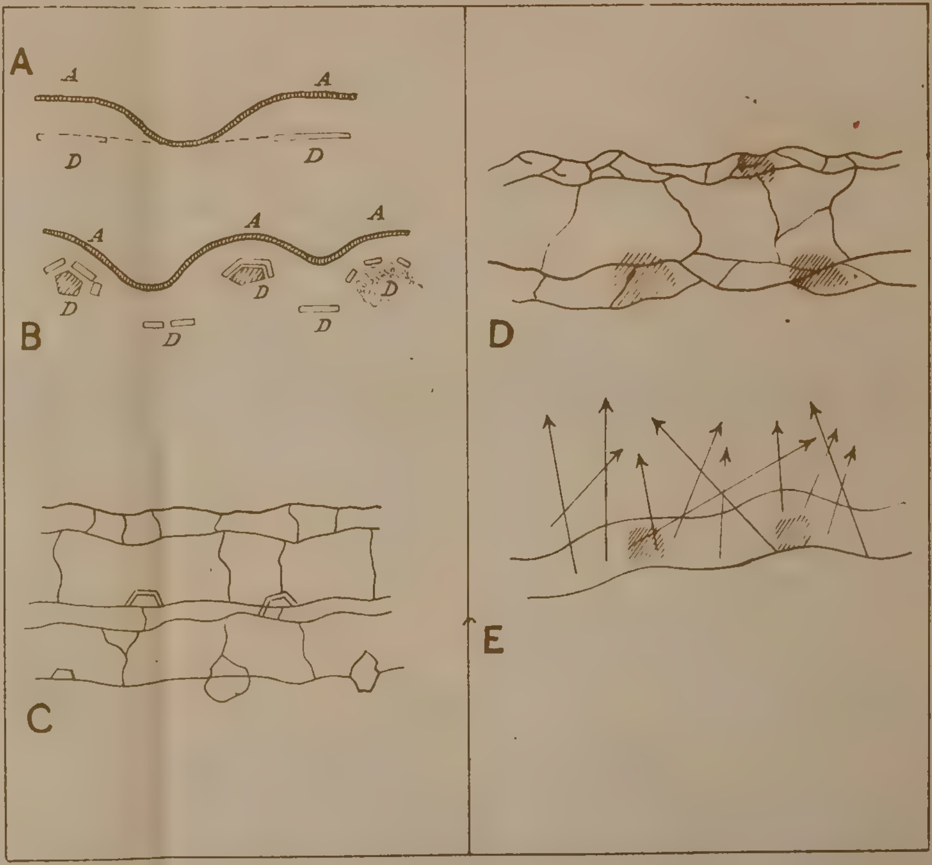


as for Sketch № 43
e 1:80,000



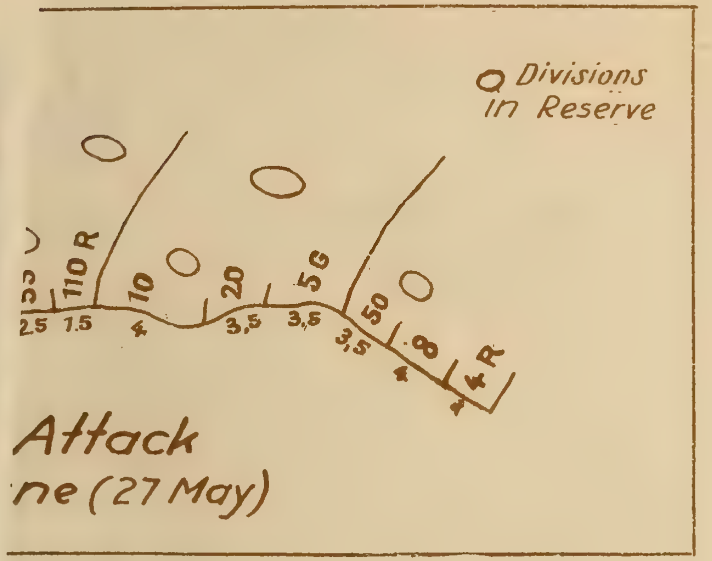
Map N° 4

Points of Support



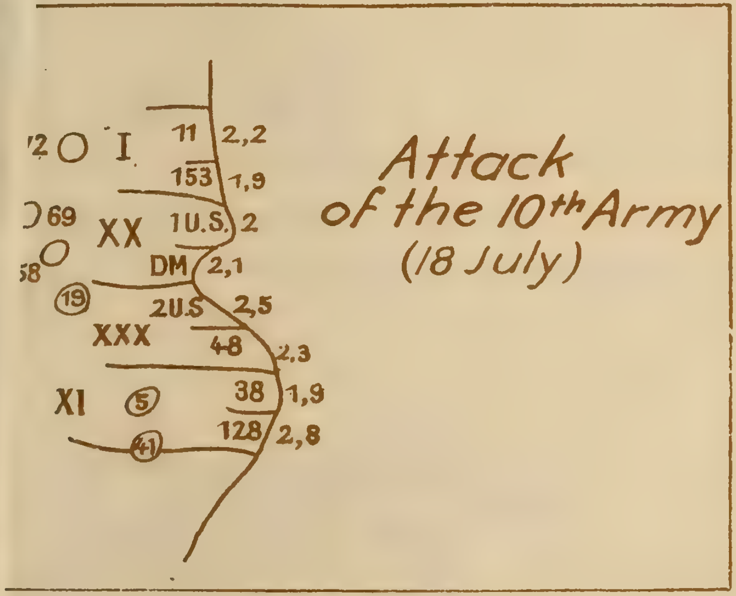
57 le Pana
la Glang
Cond
res

Map No 18
OF ATTACK, 1918



Attack
ne (27 May)

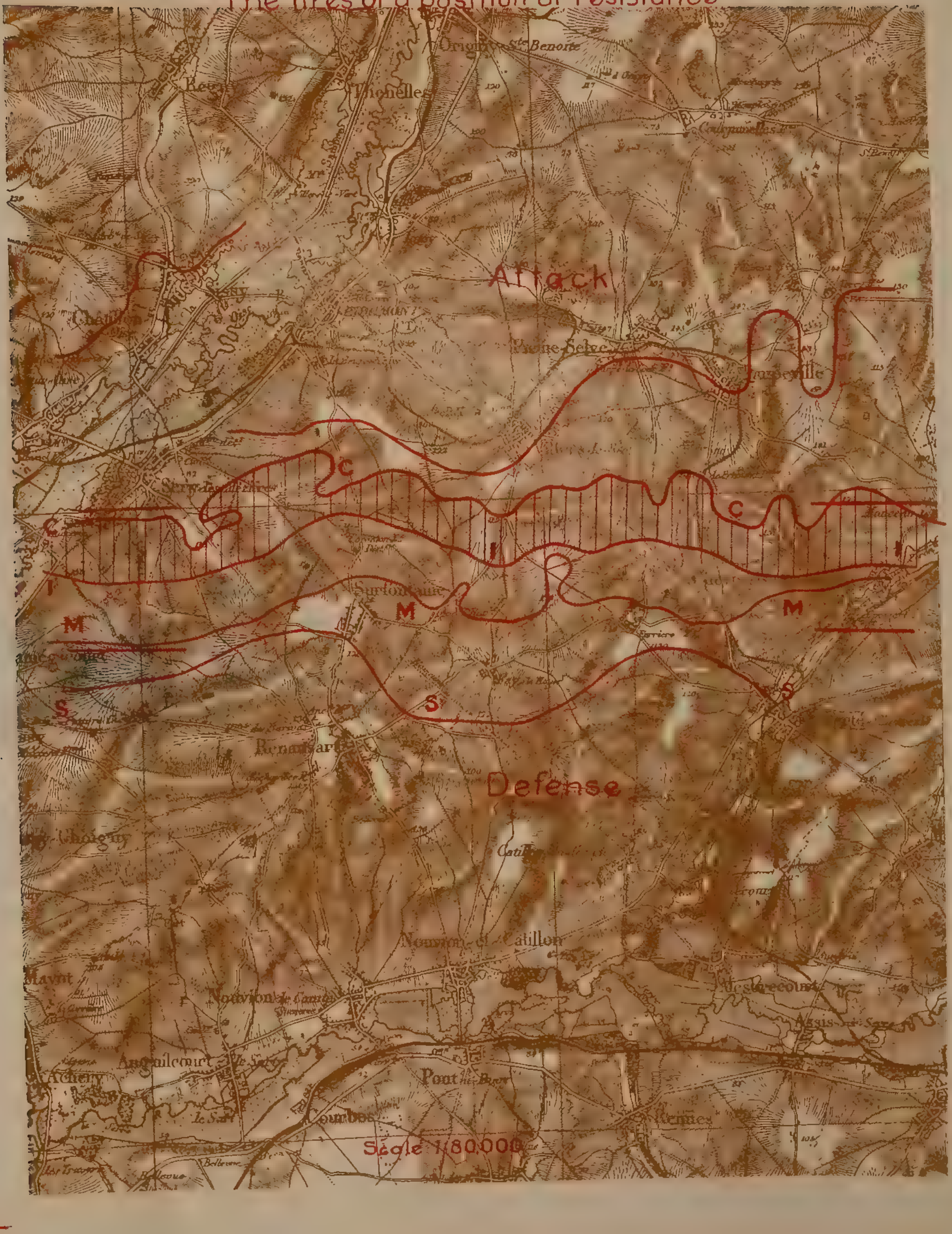
cale 1: 320,000

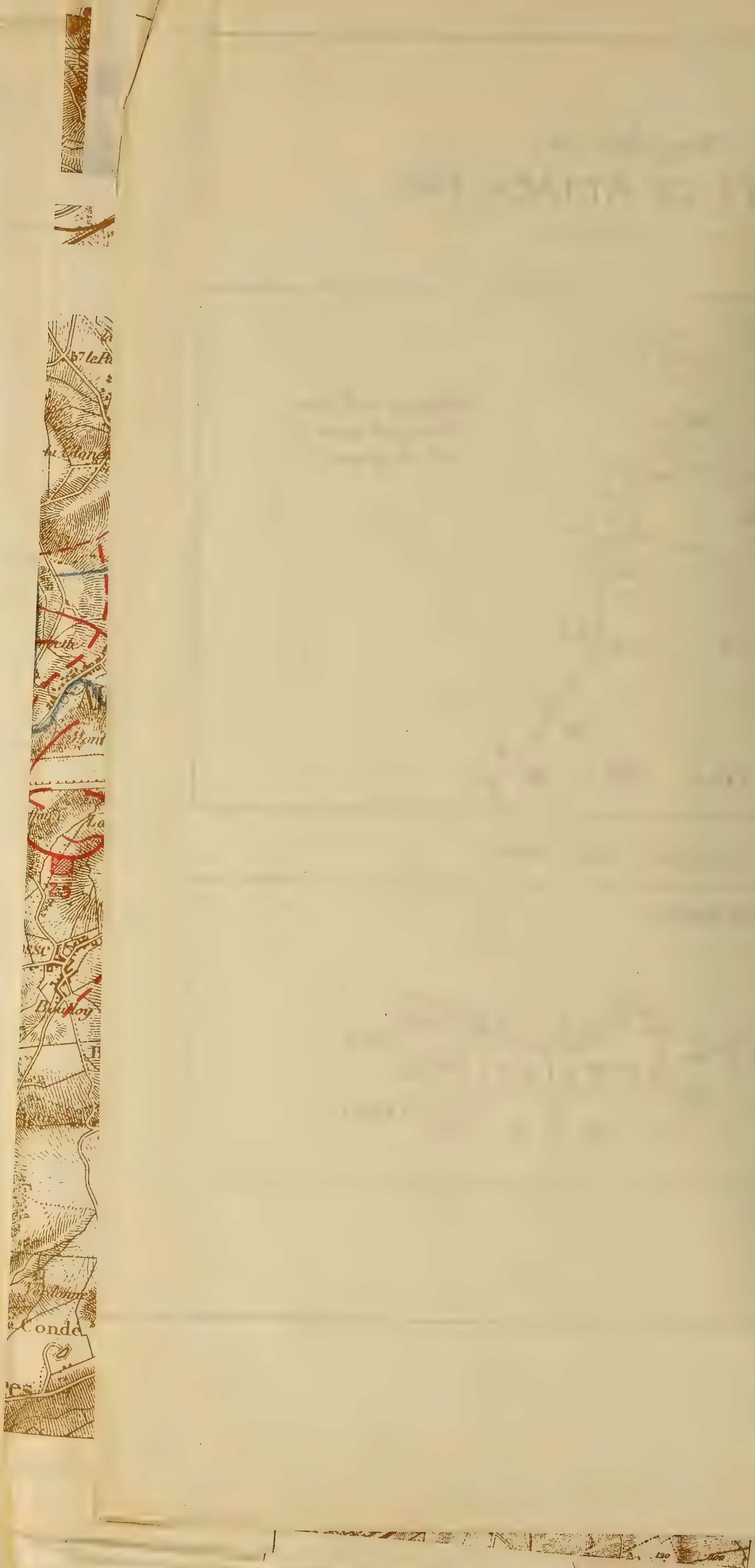


Attack
of the 10th Army
(18 July)

Sketch No 5

The fires of a position of resistance



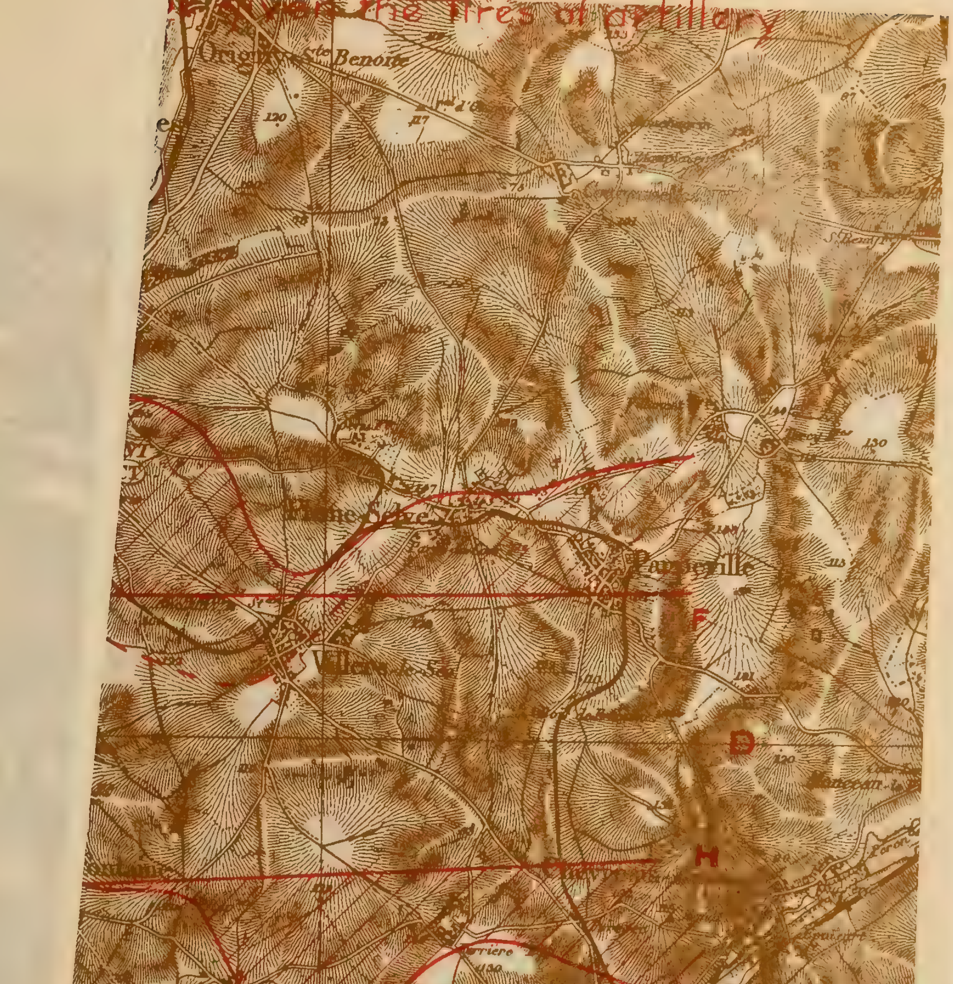

75
Conde

32

of. engagement

Sketch No20

given the fires of artillery

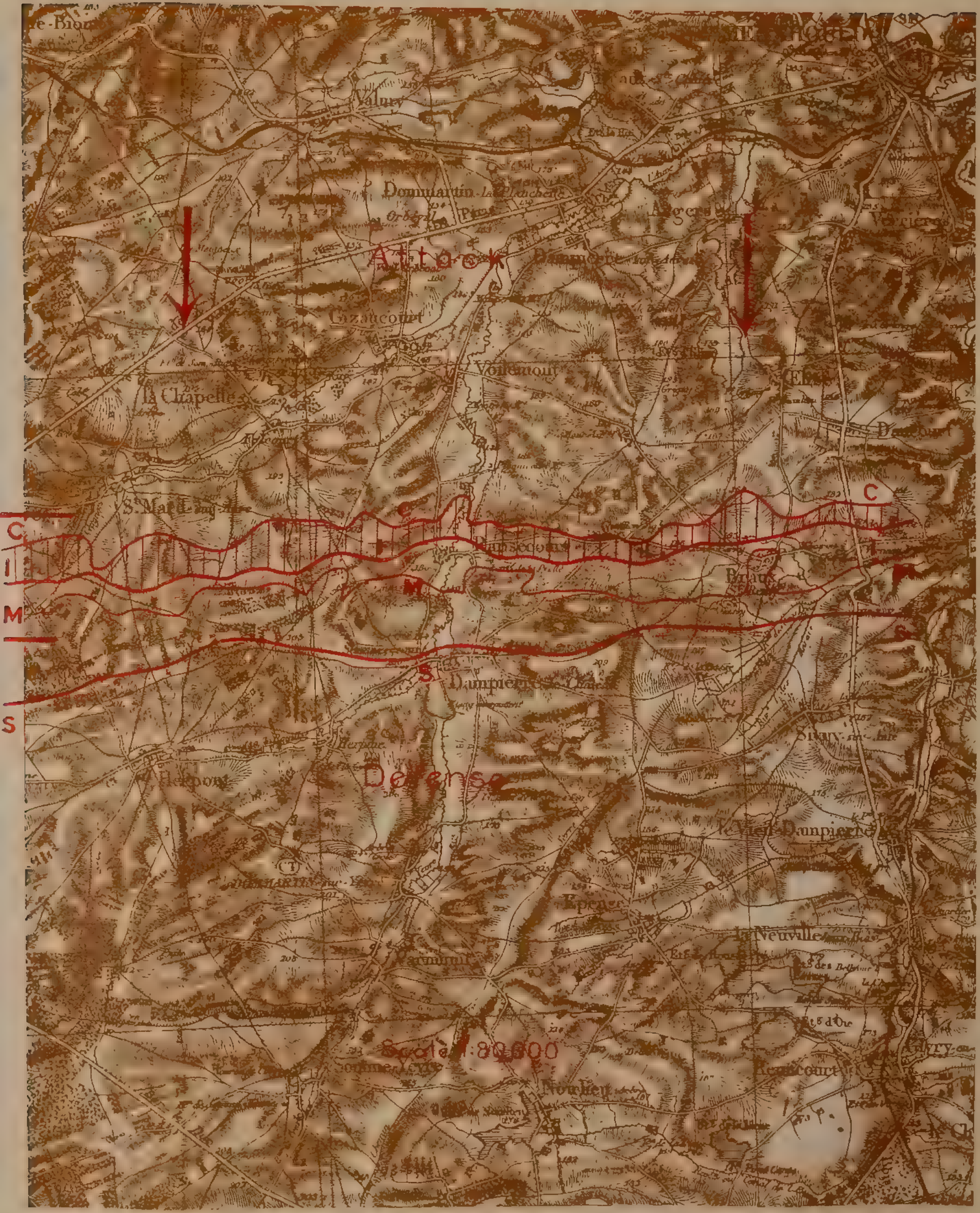


Scale 1:80,000

120
100

Sketch No 6

The fires of a position of resistance



57 la
75
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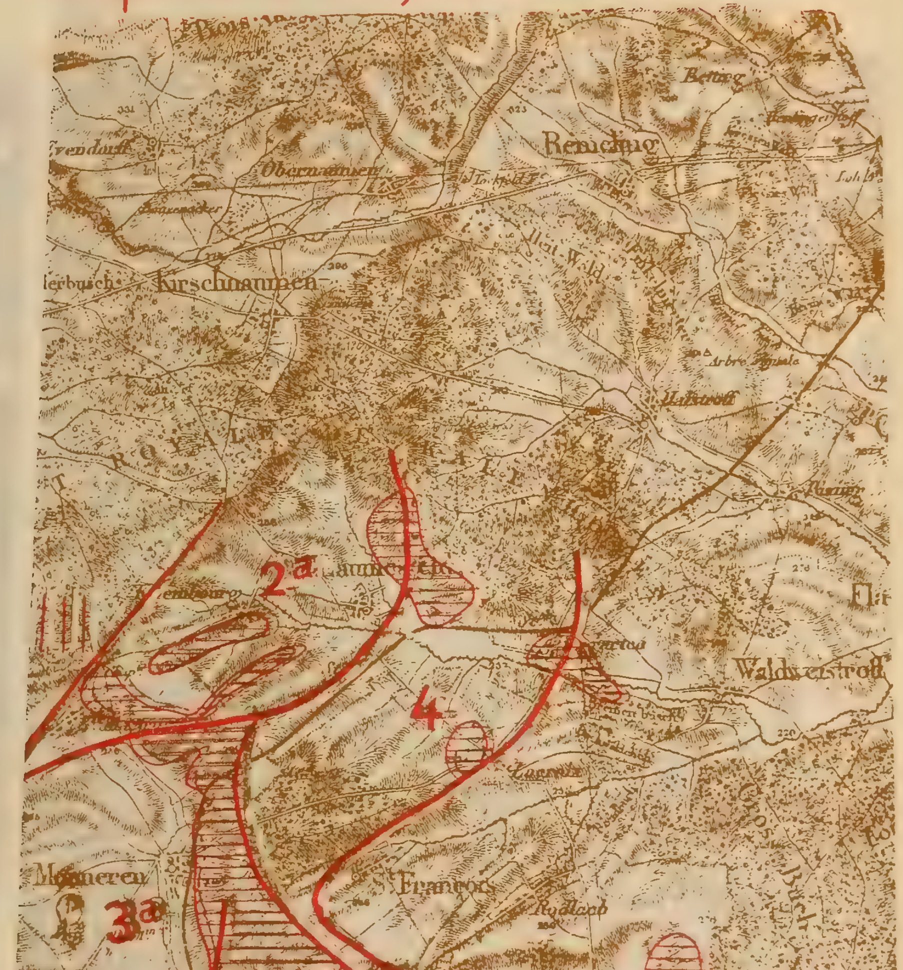
120

32

of. engagement

etch Nº22

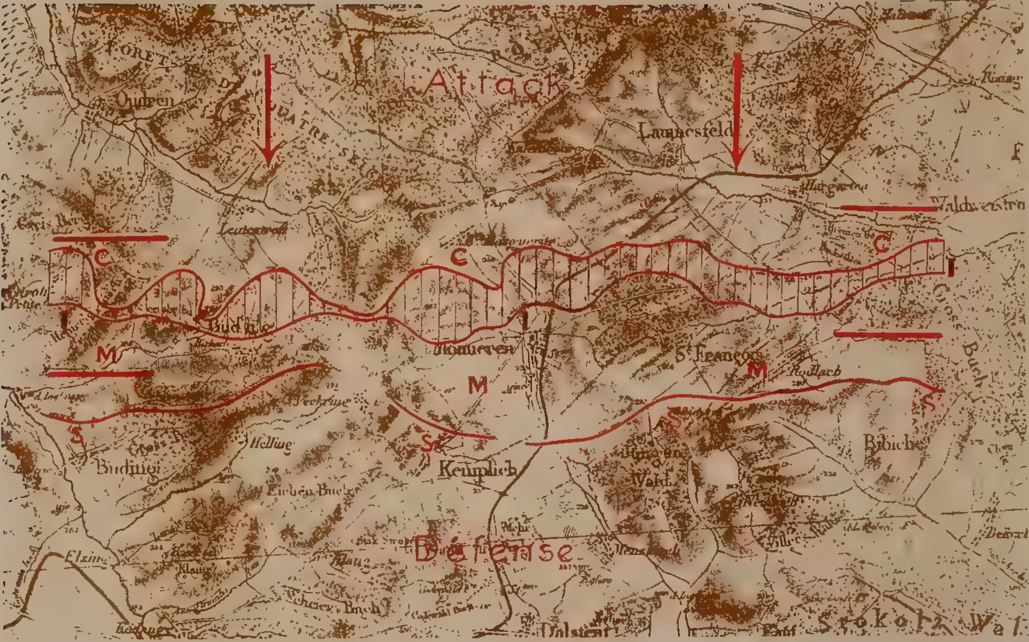
onquest of the ground



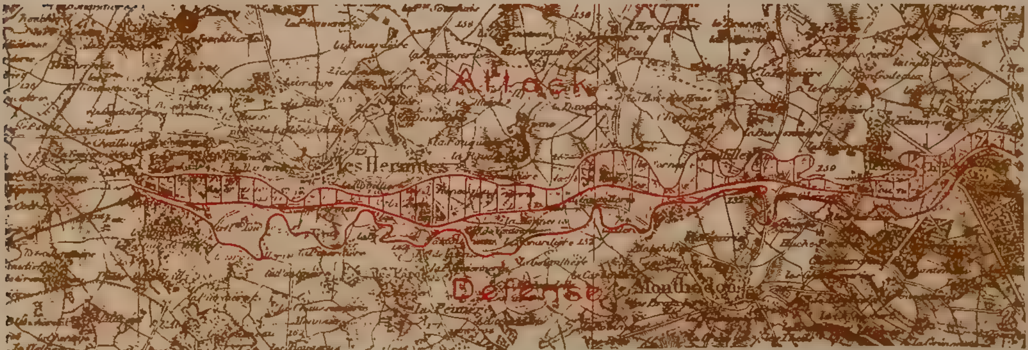
cale 1:80,000

120

Sketch Nº 7



Sketch Nº 8



Scale 1:80,000

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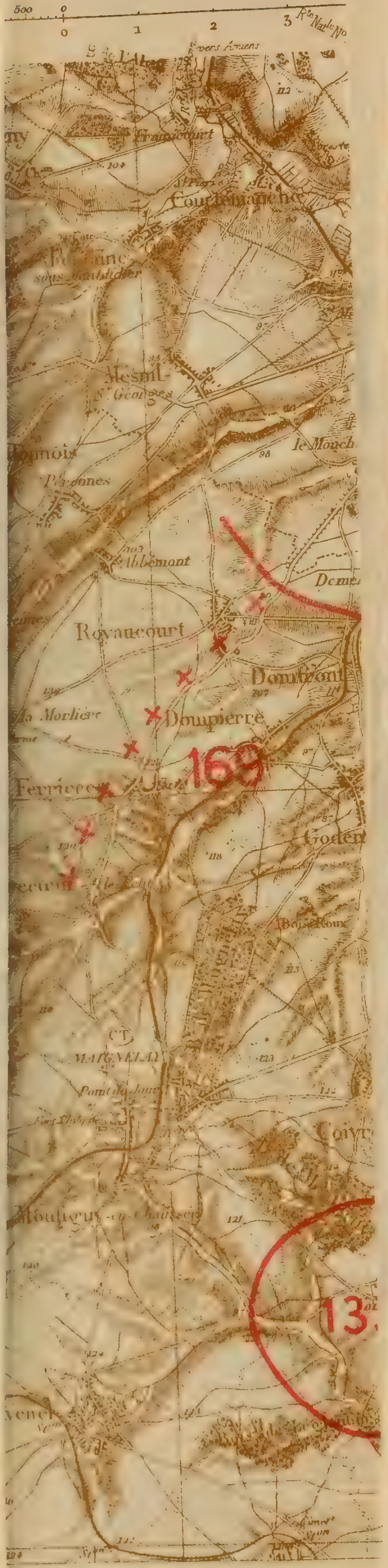
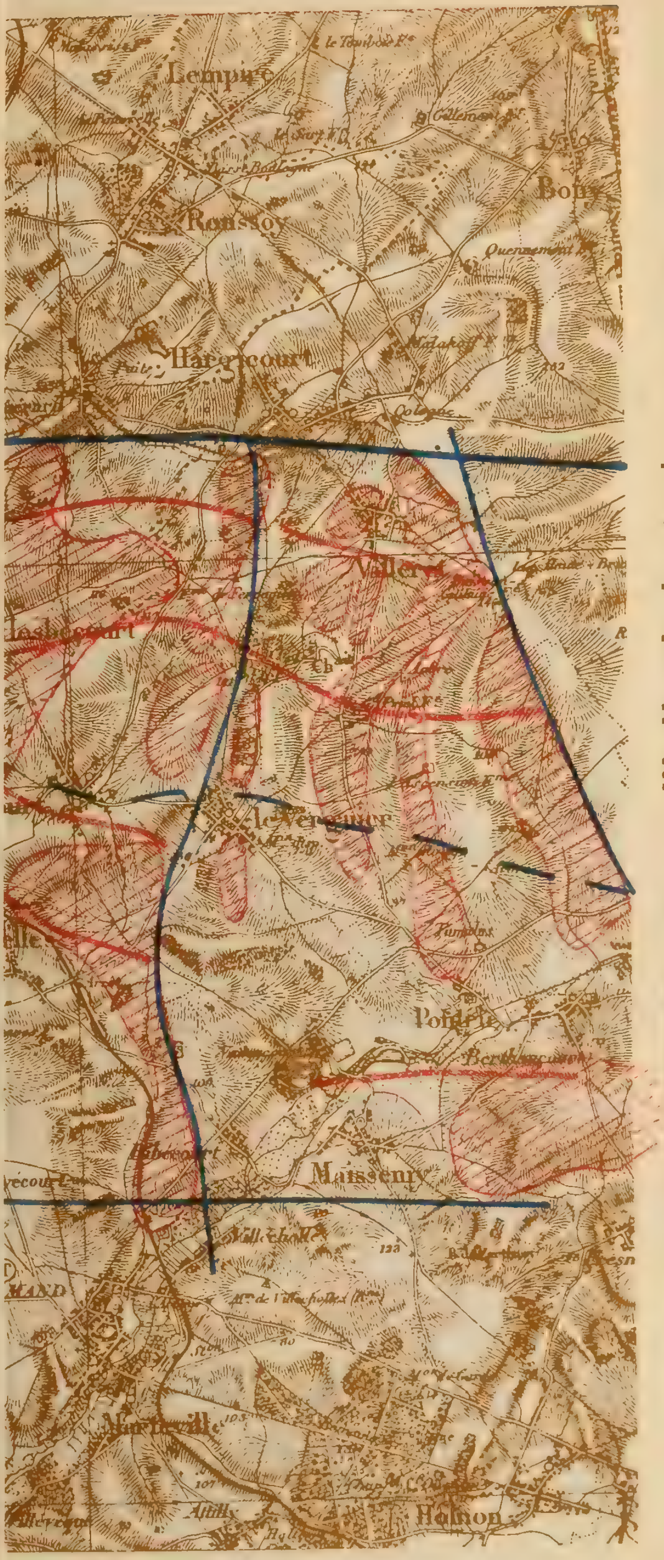
of. engagement





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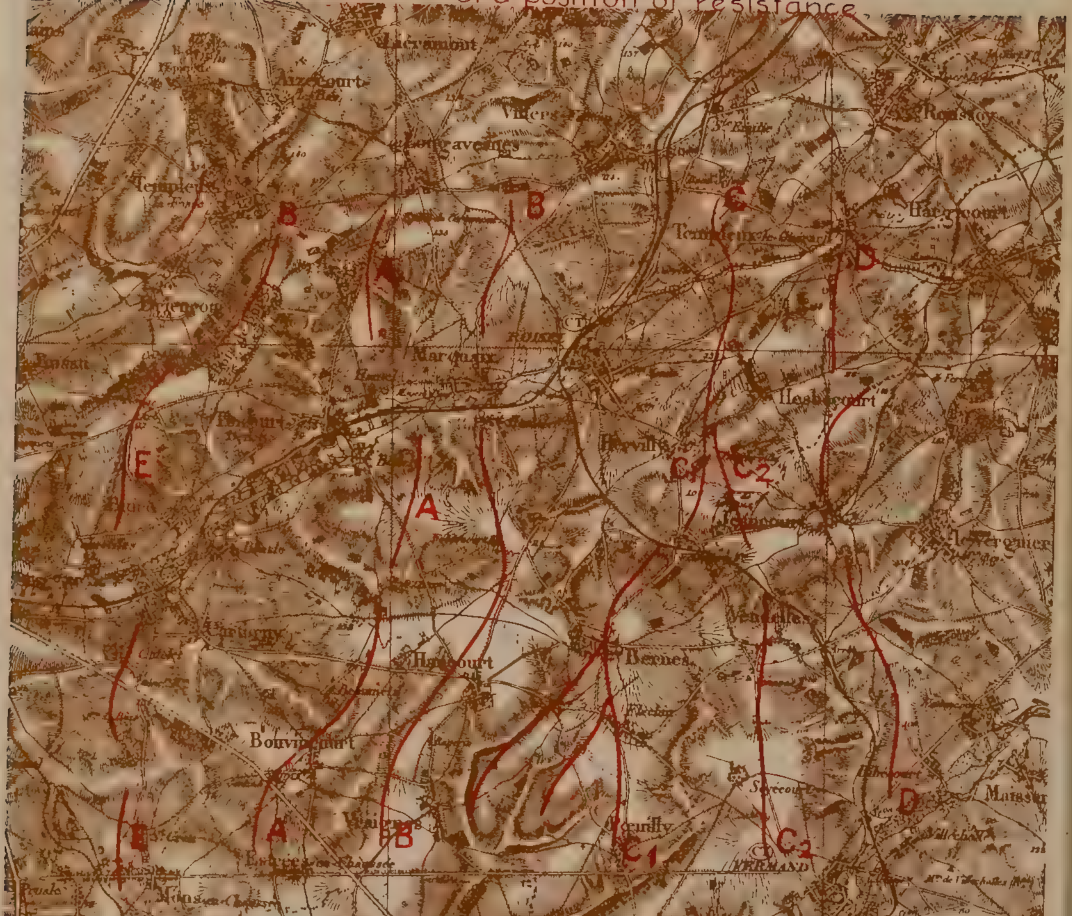
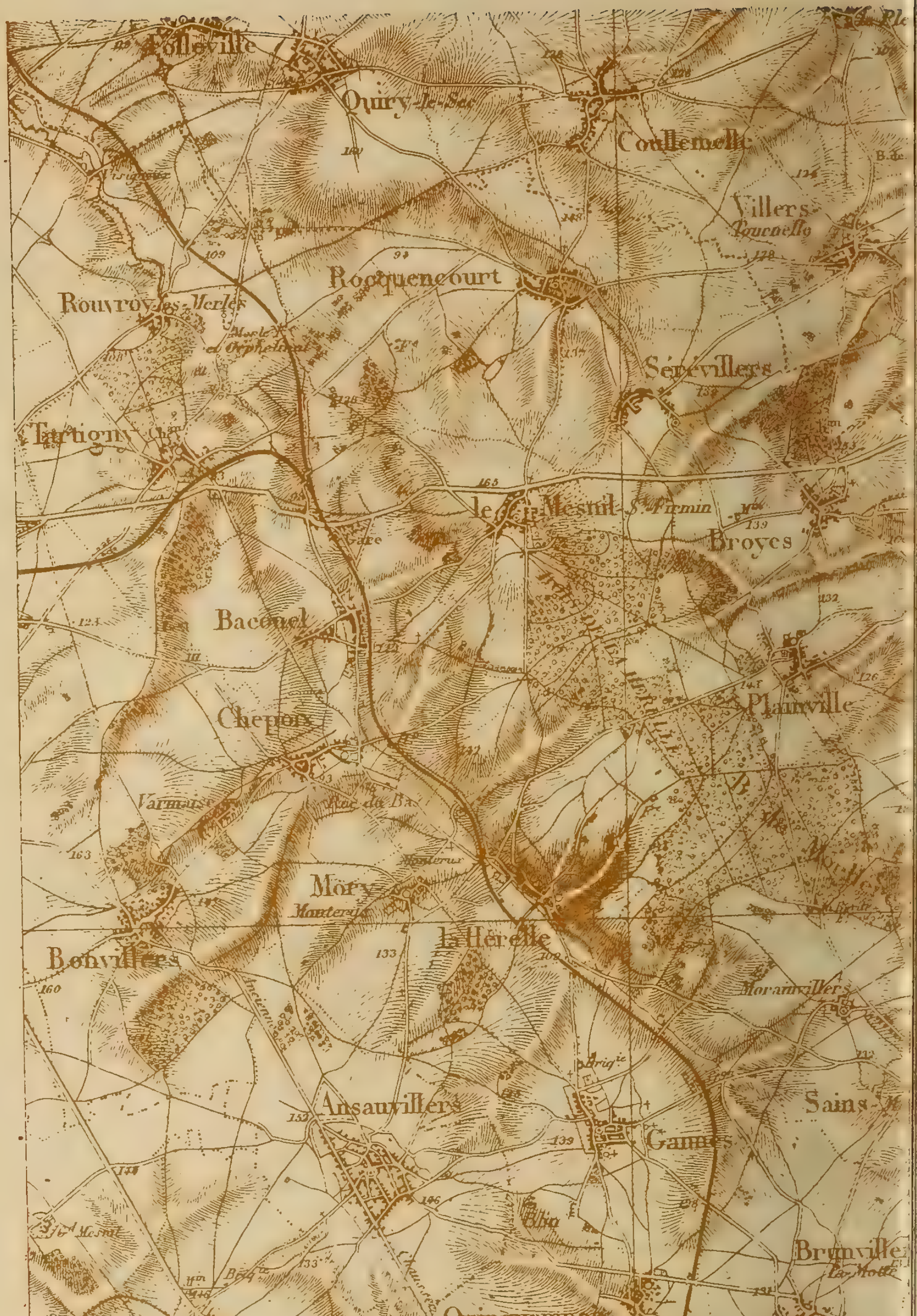
Sketch No 9

Selection of a position of resistance

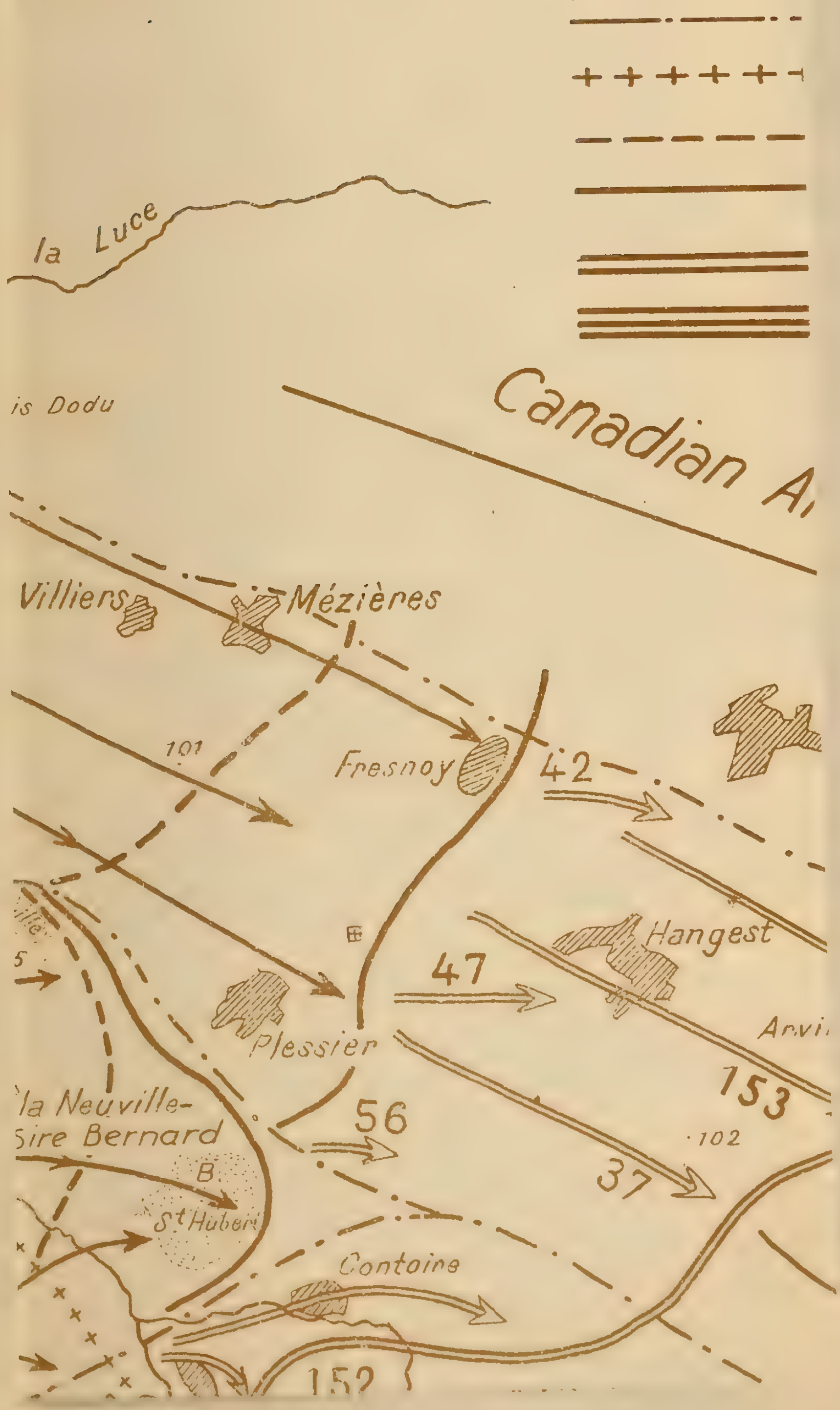


Scale 1:80,000


Folleville
Quiry-le-Sec
Coullemelle
Villers Tournelle
Rocquencourt
Rouvroy-les-Merles
Merles et Orphelinat
Tartigny
Sérévillers
le Mesnil St Firmin
Broyes
Baconel
Plainville
Chepoix
Varmaise
Rue du Bas
Mory
Montoraux
la Hérelle
Bonvillers
Morainvillers
Ansauvillers
Gannes
Sains
Brunvillers
la Motte
Quinquempoix
Wavignies
Plainval
Trémonvillers
Fumechon
La Côte
La Garenne
Catillon
B. Bagon
B. des Loups
St JUST en Chaussée
le Plessier
Nourard-le Franc
St Vaast
Bu.maubert
Lévrier
Val

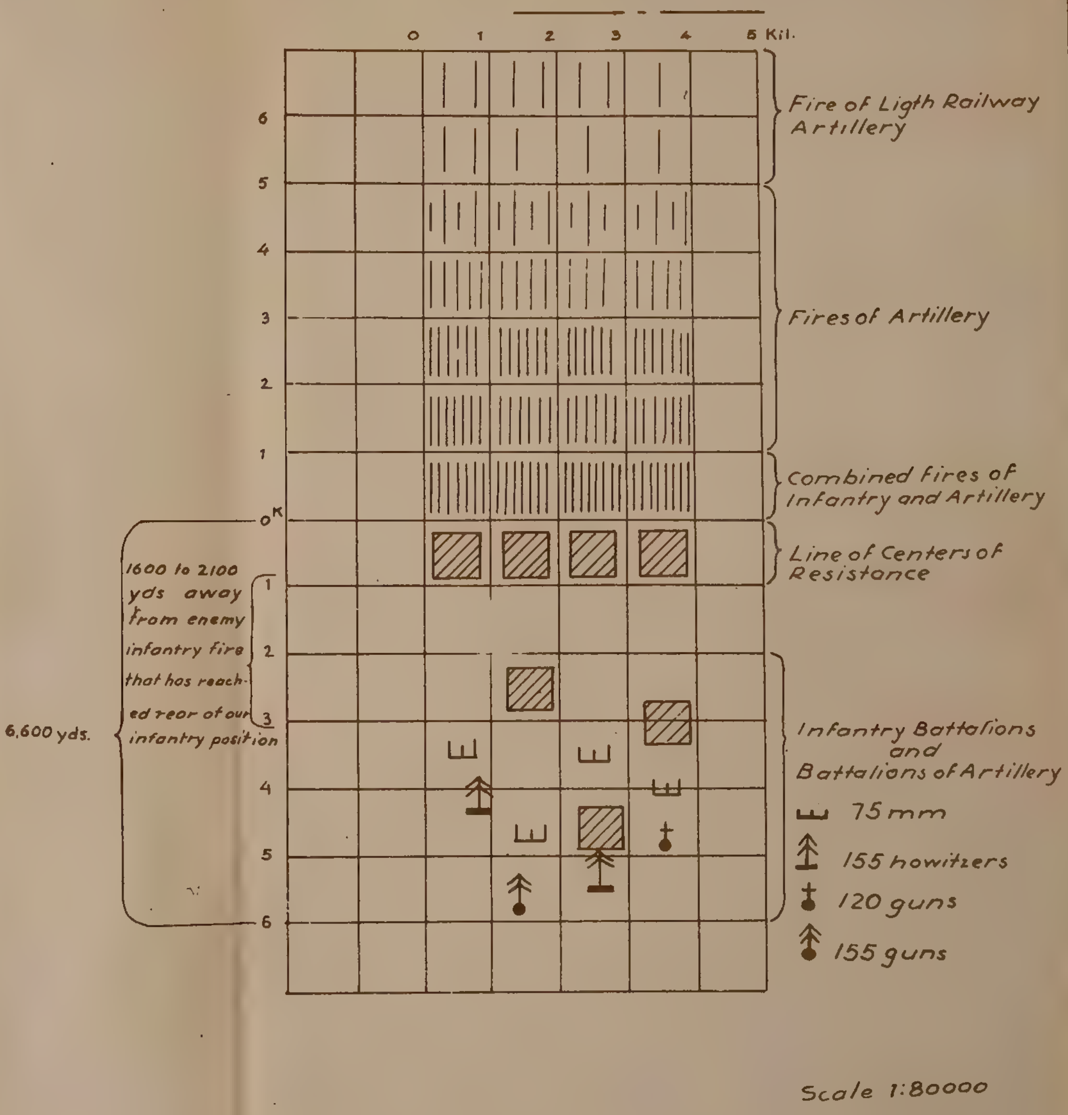
The Gern

RST ARMY



Map No. 10

General Scheme of the organized Defense of a Position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6
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1
2
3
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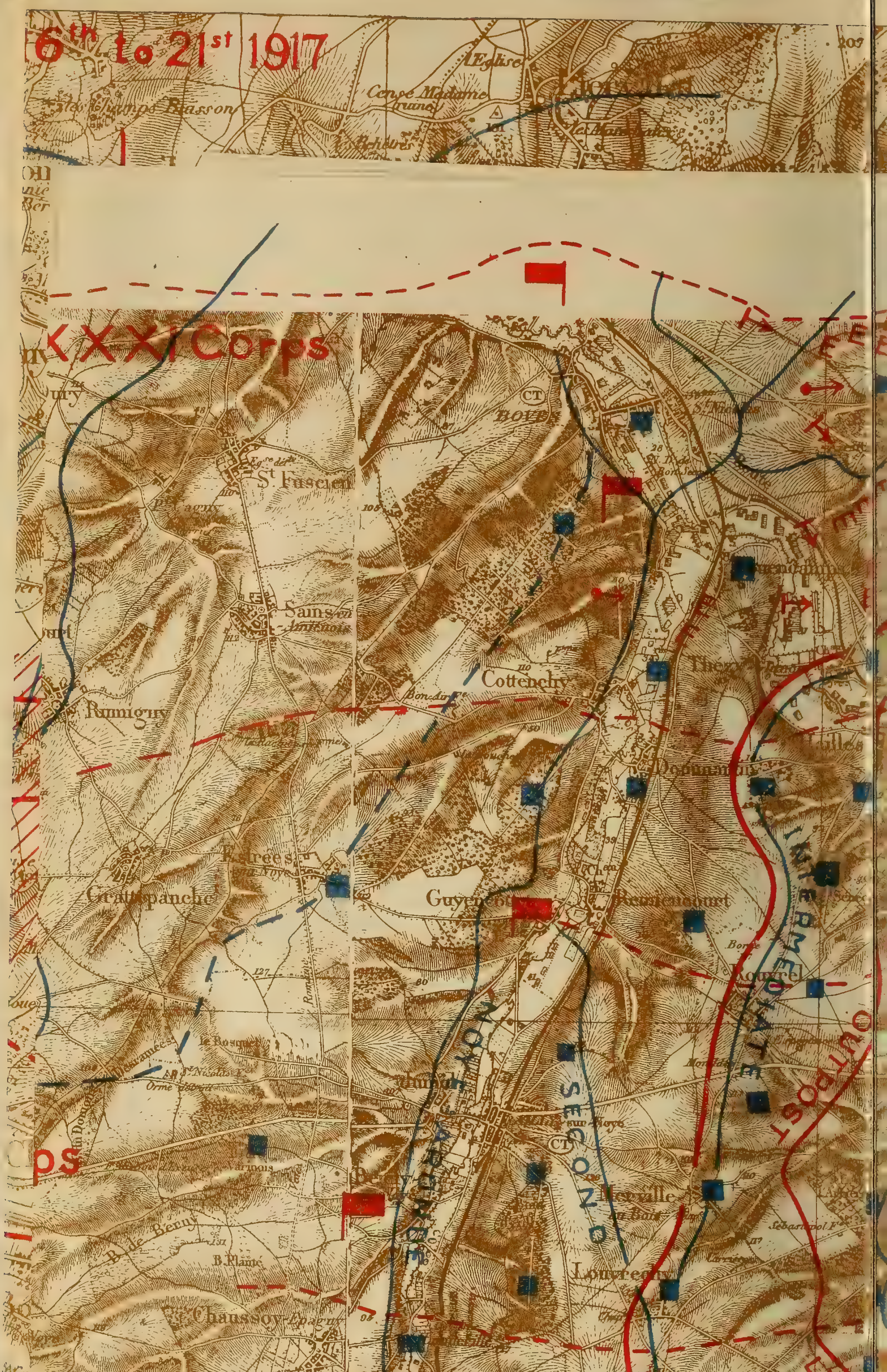
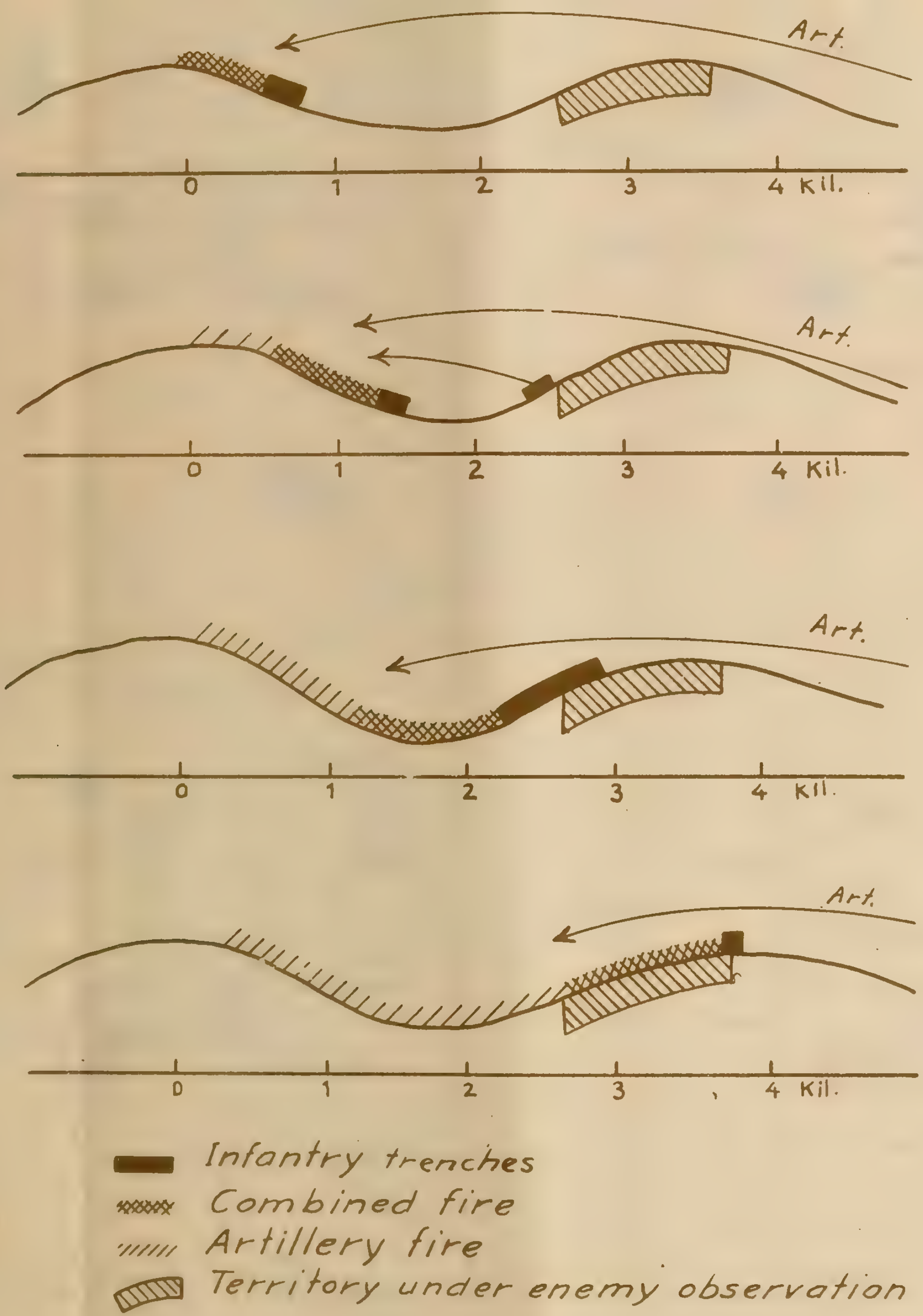
6
Fire of Ligth Railway Artillery
Fires of Artillery
Combined fires of Infantry and Artillery
Line of Centers of Resistance
1600 to 2100 yds away from enemy infantry fire that has reached rear of our infantry position
6,600 yds.
Infantry Battalions and Battalions of Artillery
75 mm
155 howitzers
120 guns
155 guns
Scale 1:80000


6th to 21st 1917
Cense Madame (ruine)
l'Eglise
les Champs Brasson
XXXI Corps
ps
BOVES
CT
St Fuscien
Sains en Amienois
Cottenchy
Rumigny
Estrées sur Noye
Grattepanche
Guyencourt
Remiencourt
Dommartin
Thezy
Rouvrel
le Bosquet
Orme
Berny
B. de Berny
B. Flamé
Chaussoy-Epagny
Merville au Bois
Louvrechy
Thory
Sourdon
Chirmont
la Faloise
Hallivillers sous Lawarde
Esclainvillers
SECOND POSITION
INTERMEDIATE LINE
OUTPOST LINE

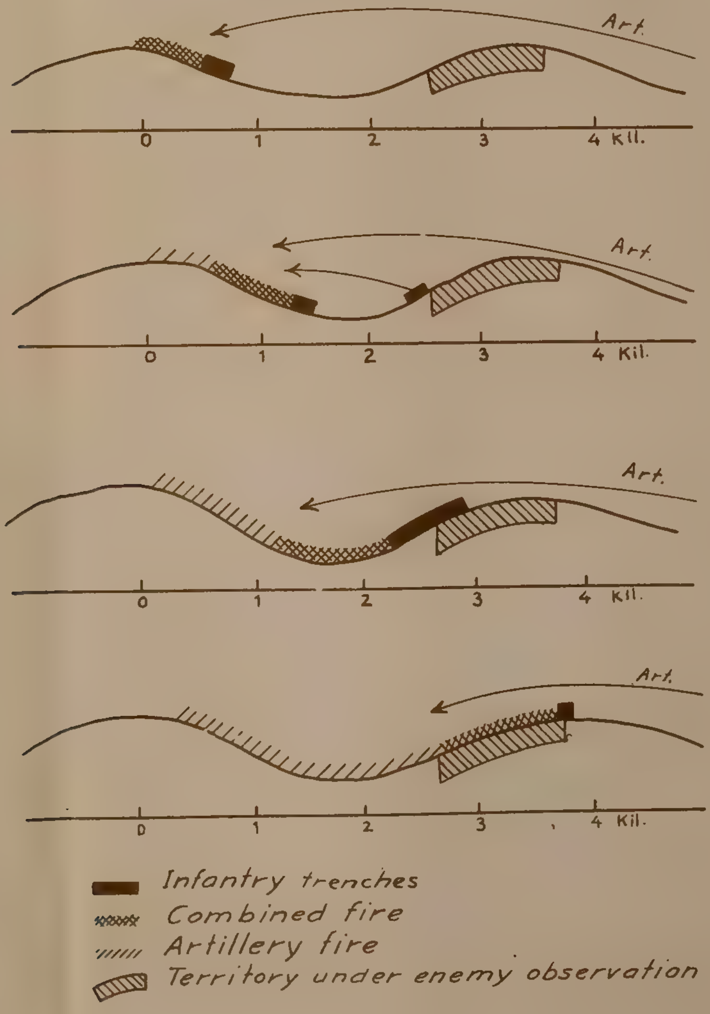
Map No.11

Influence of the profile of the terrain



Map No. 11

Influence of the profile of the terrain



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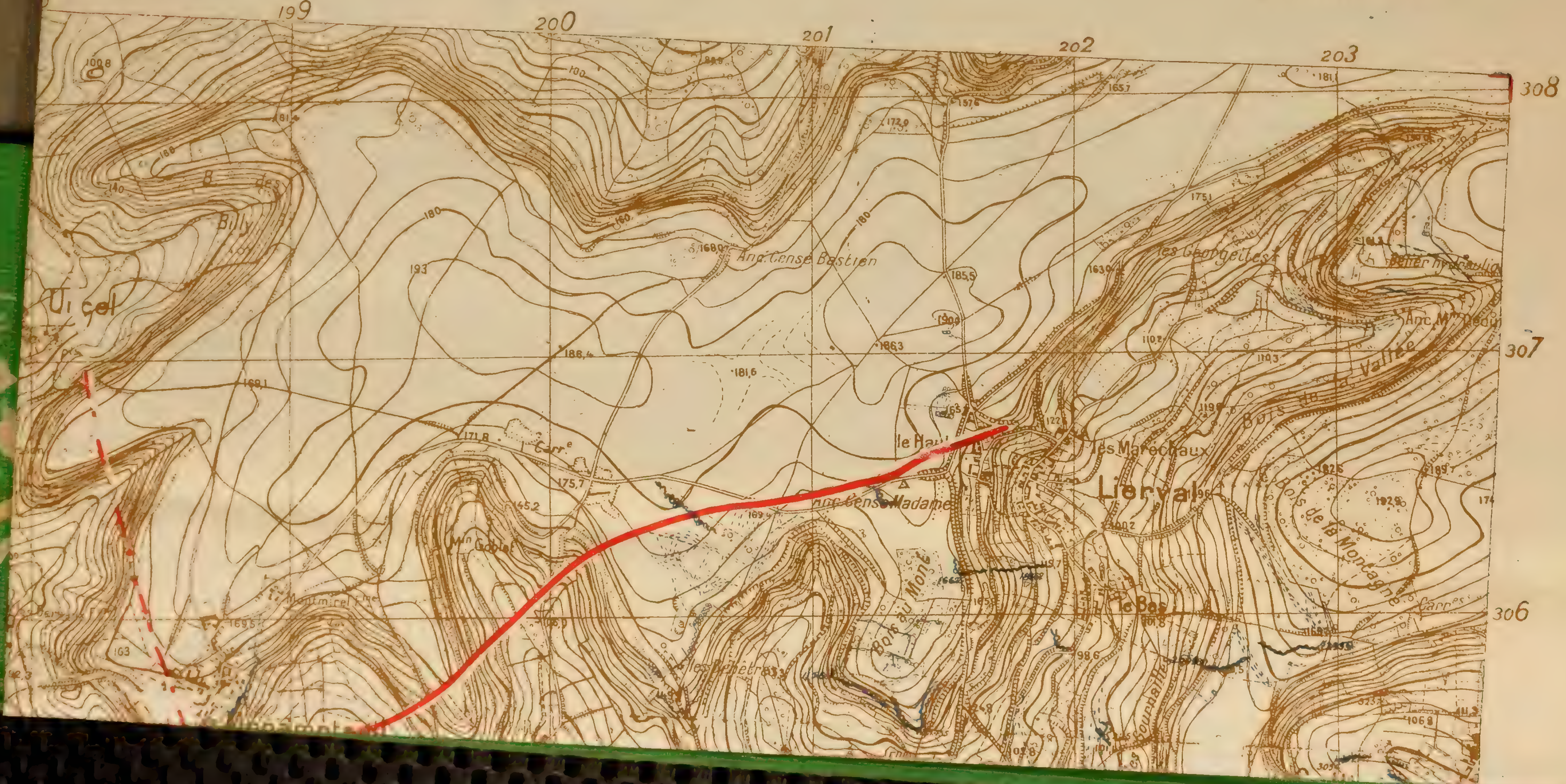
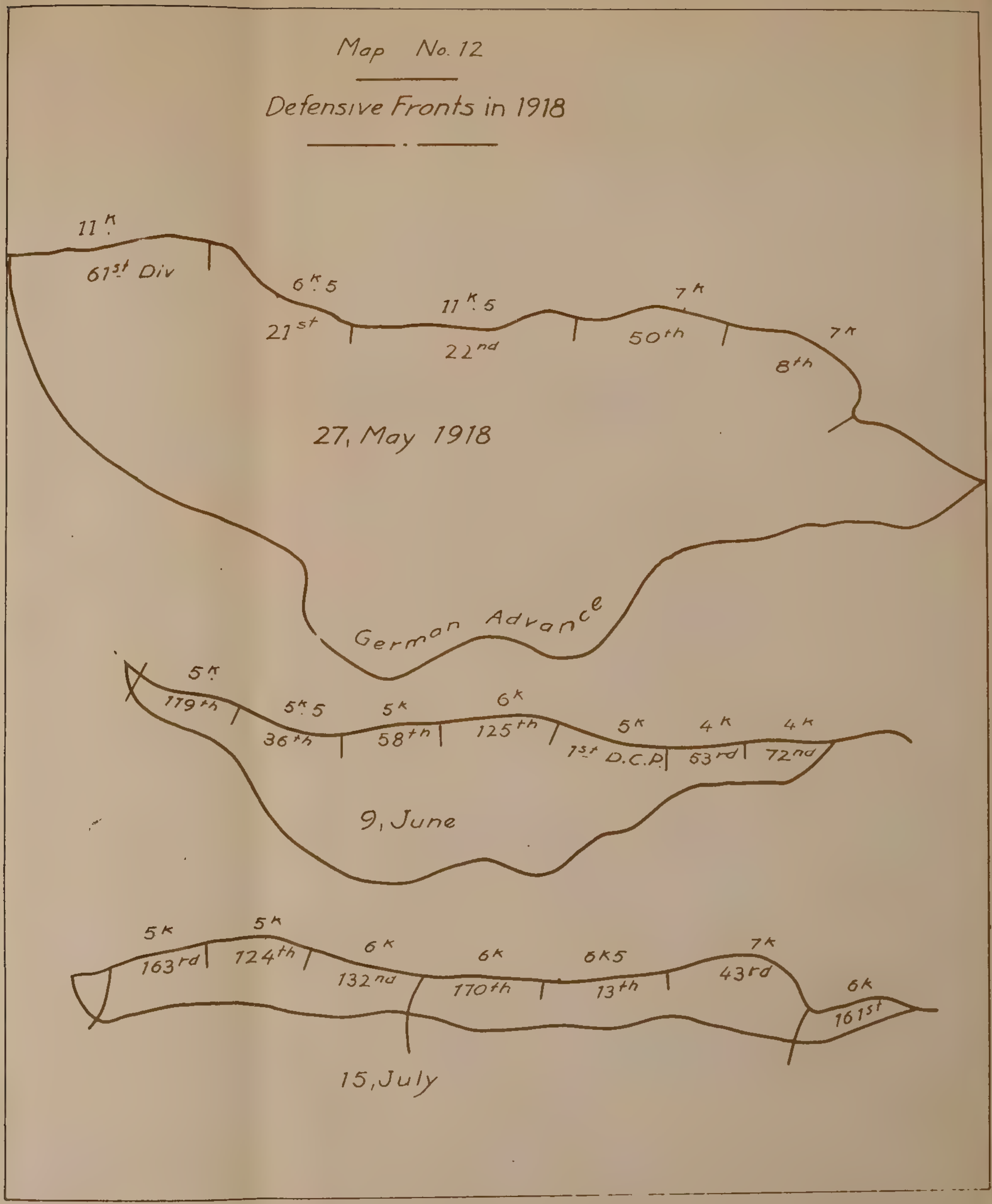
E
E
E
E
E

April 16th to 21st 1917

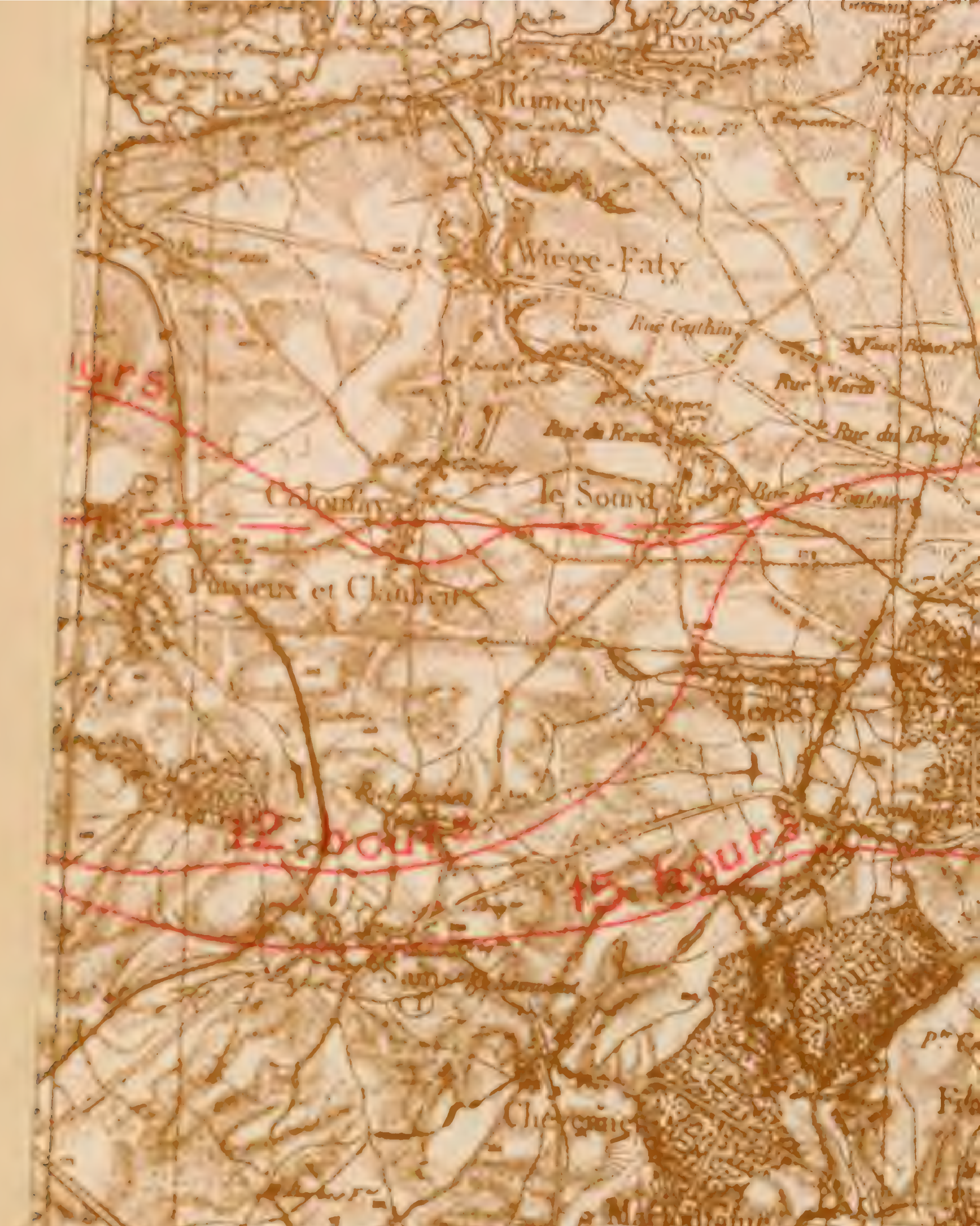
CROQUIS N° 56





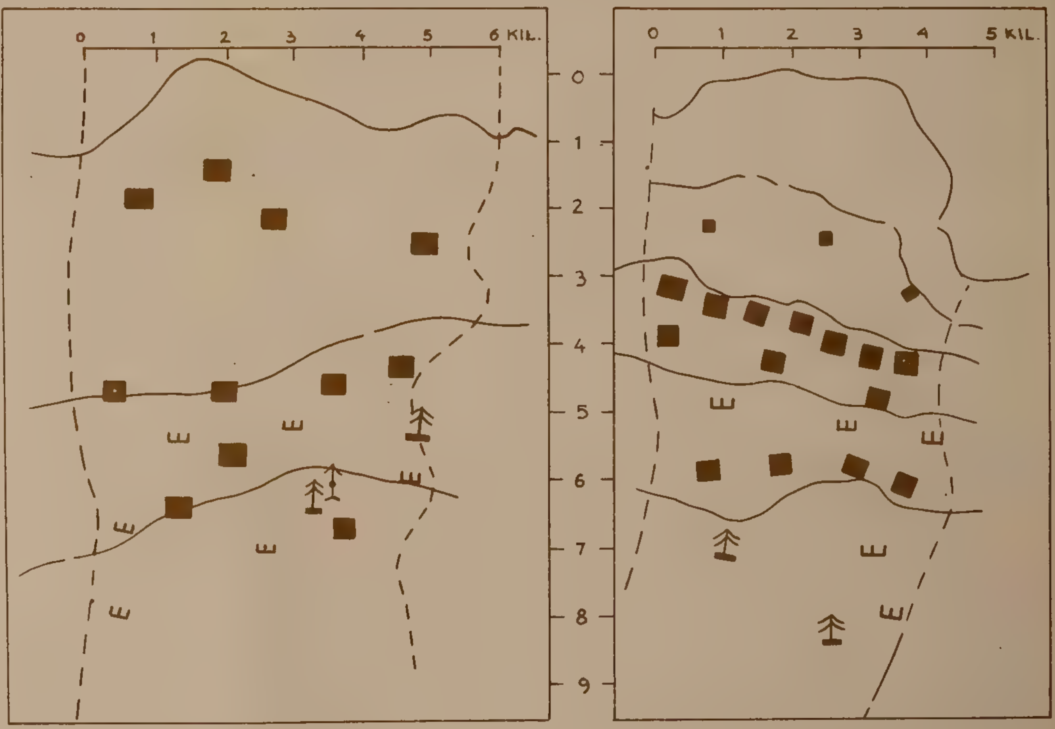
Map No. 12

Defensive Fronts in 1918


Proisy
Romery
Wiège-Faty
Rue Guthin
Rue Marin
Rue du Bois
Rue des Fontaines
urs
Colonfay
le Sourd
Puisieux et Clanlieu
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
la Chaussée
Berlancourt
Sons
Chatillon
Thiernu

Map No 13

Exemples of Defensive Deployments



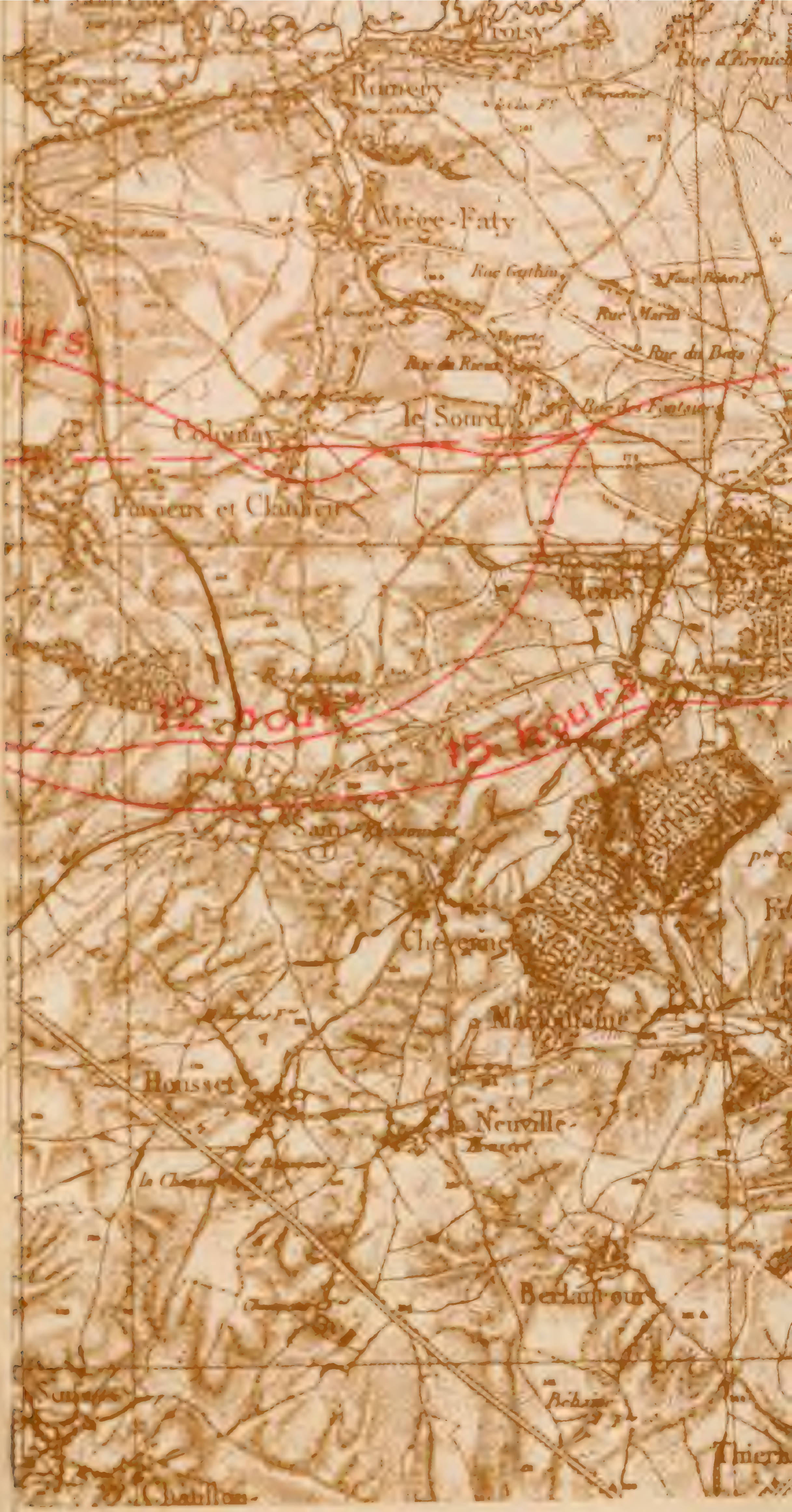
125th Division
June 9, 1918

43rd Division.
July 15, 1918

■ Infantry Battalion
⊔ Battalion of 75s

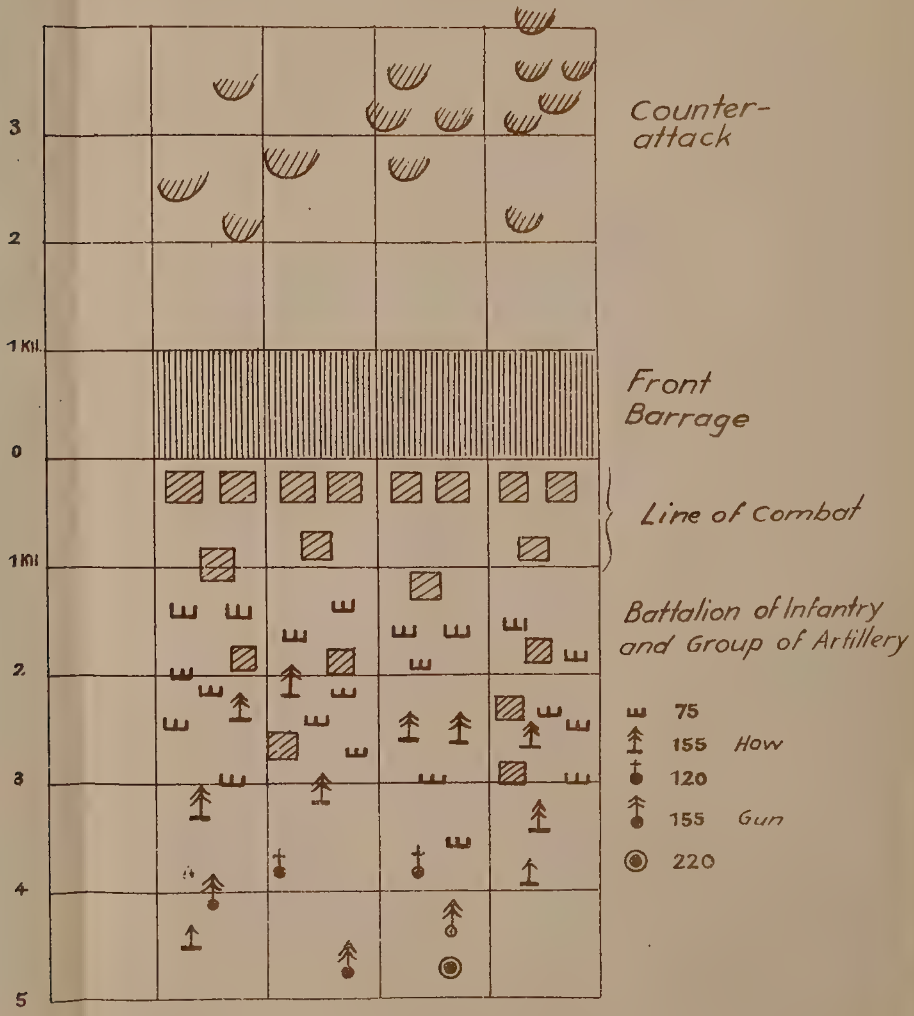
⊥ Battalion of 155 howitzers

Scale 1:80000

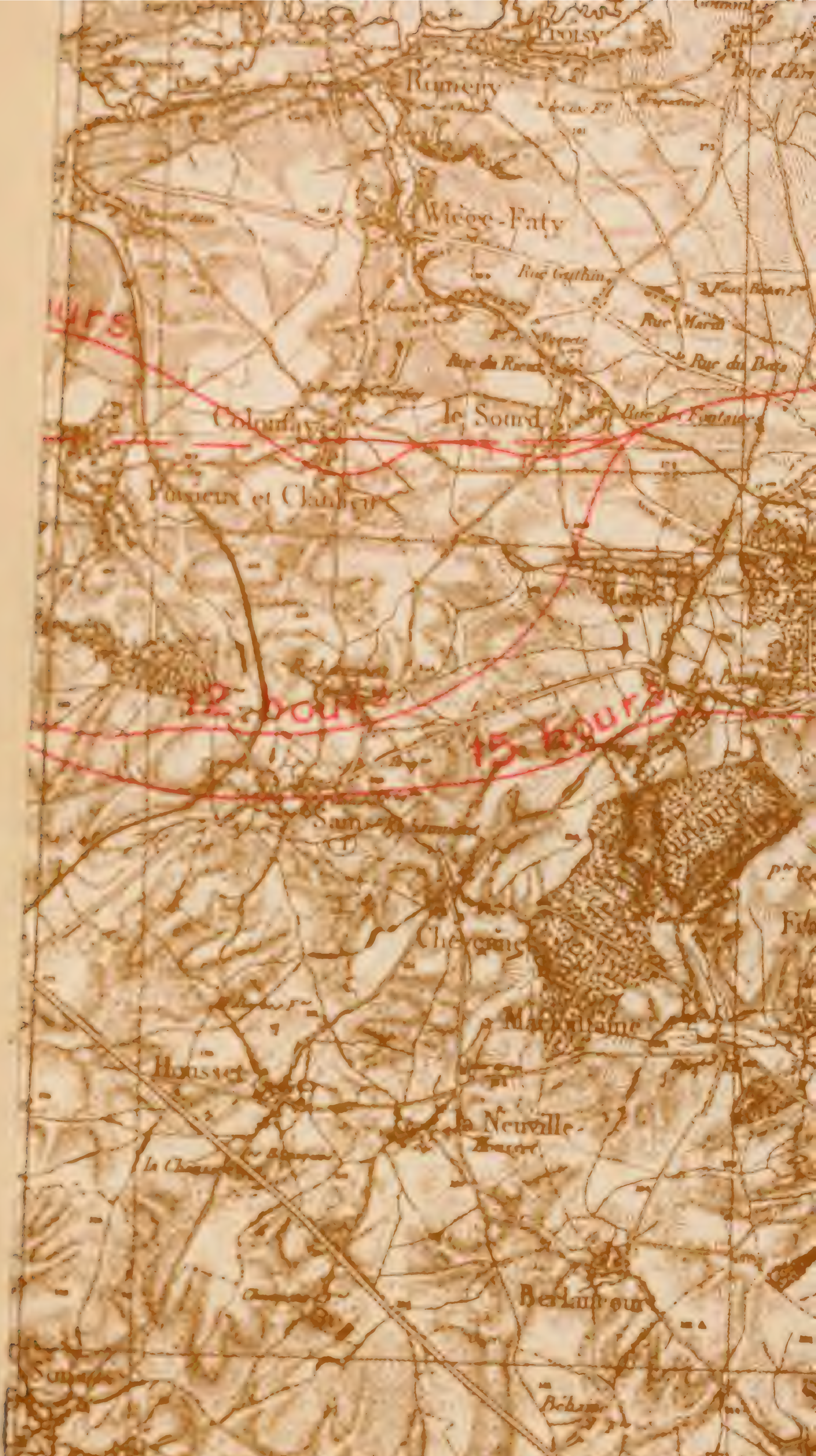

Proisy
Rue d'Ernich
Romery
Wiège-Faty
Rue Marin
Rue du Bois
le Sourd
Colonnay
Puisieux et Clanlieu
urs
12 hours
15 hours
Sains
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon-

Map No. 14

GENERAL DISPOSITIONS FOR THE ATTACK OF A POSITION OF RESISTANCE

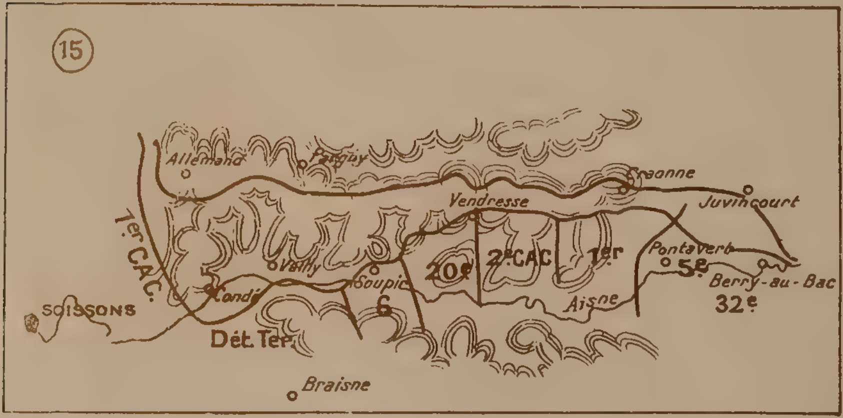


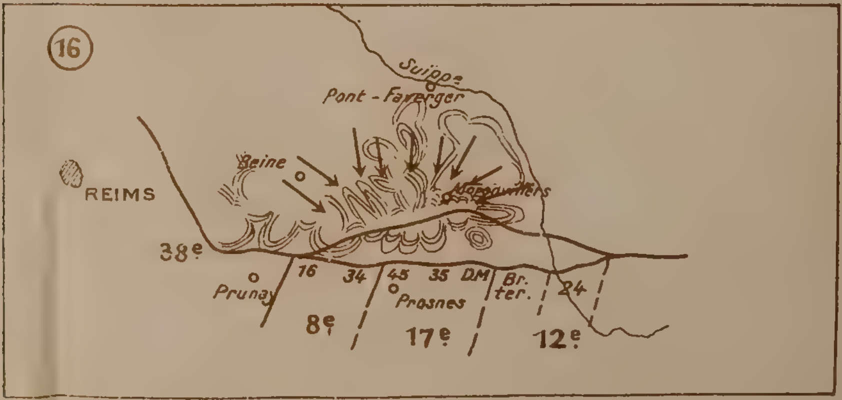
Scale 1:50,000

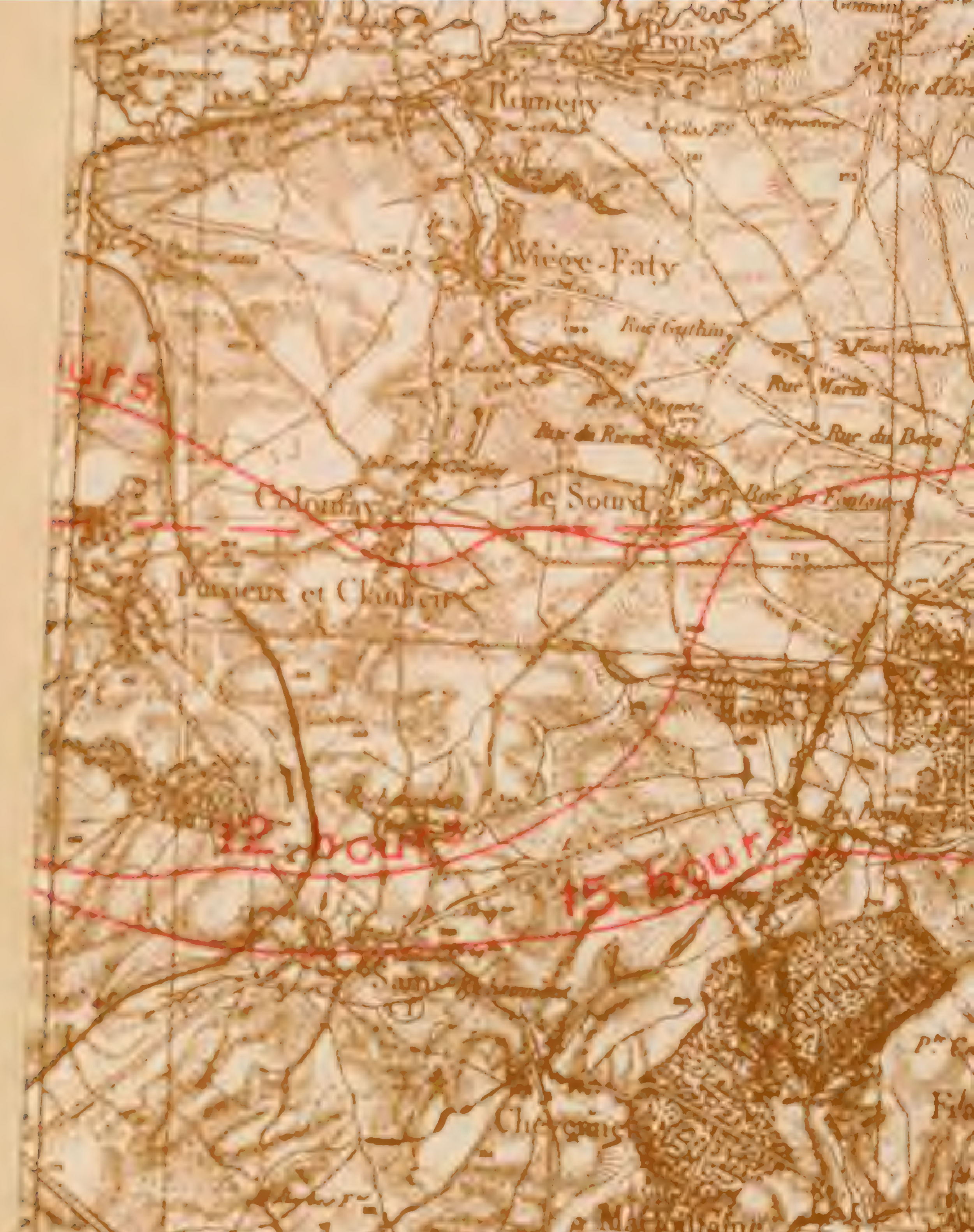

Proisy
Romery
Wiège-Faty
Rue Marin
Rue du Bois
Colonfay
le Sourd
Puisieux et Clanlieu
urs
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Châtillon

Map No's 15 and 16

15.– ATTACK ON THE AISNE *(16 April 1917)*
16.– ATTACK ON THE MORONVILLERS *(17 April 1917)*

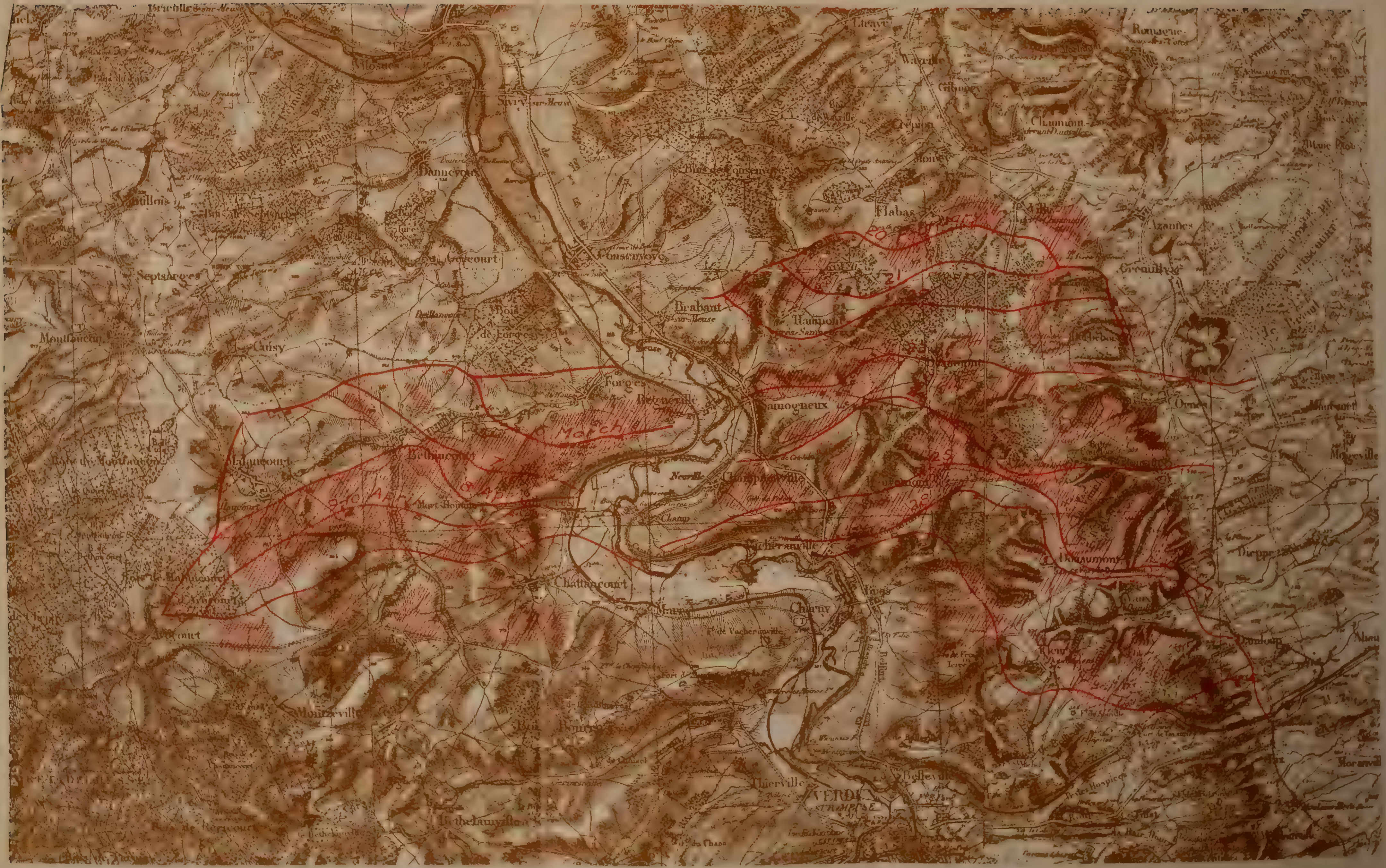


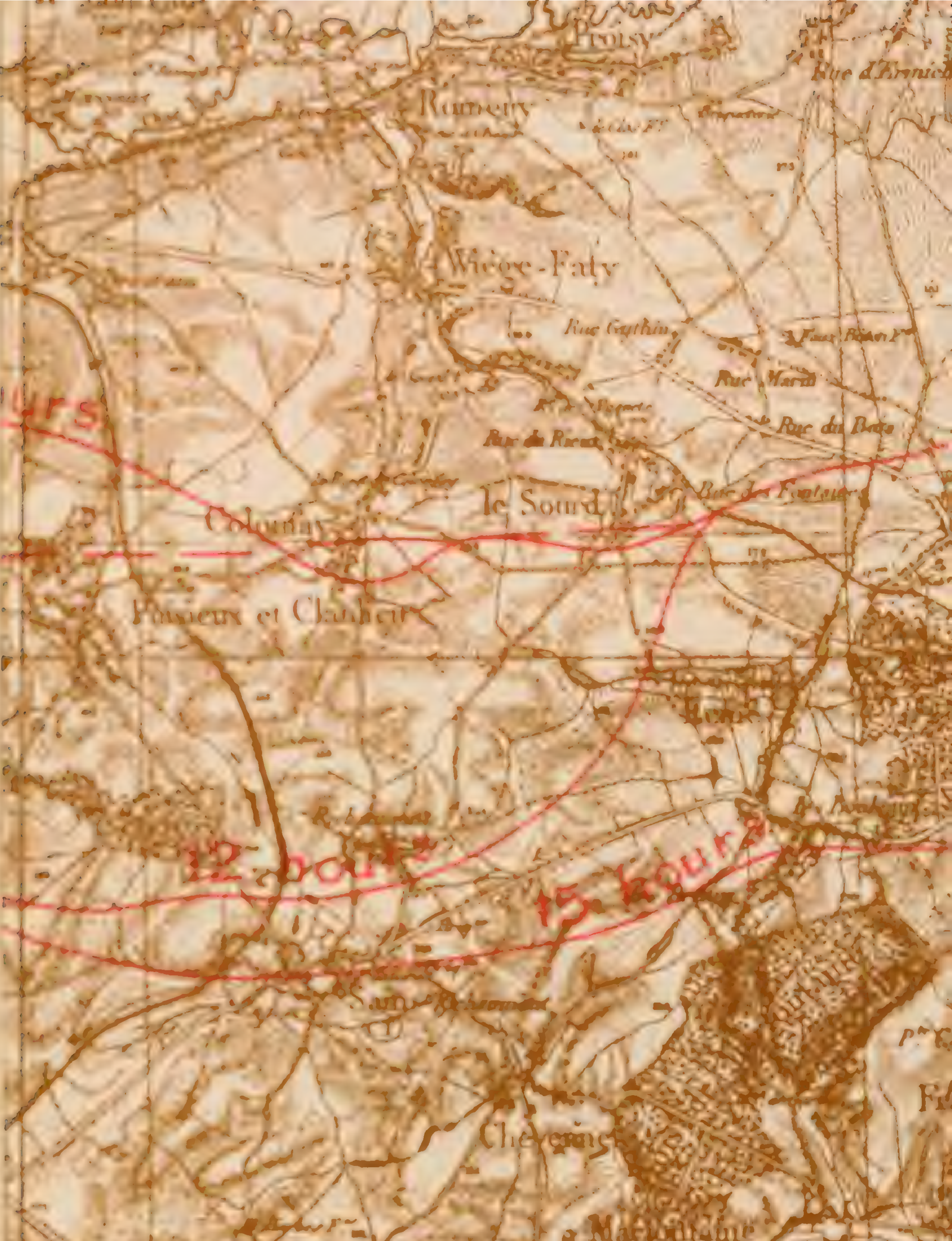



Proisy
Romery
Wiège-Faty
urs
Colonfay
le Sourd
Puisieux et Clanlieu
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Thiernu

Sketch No 17

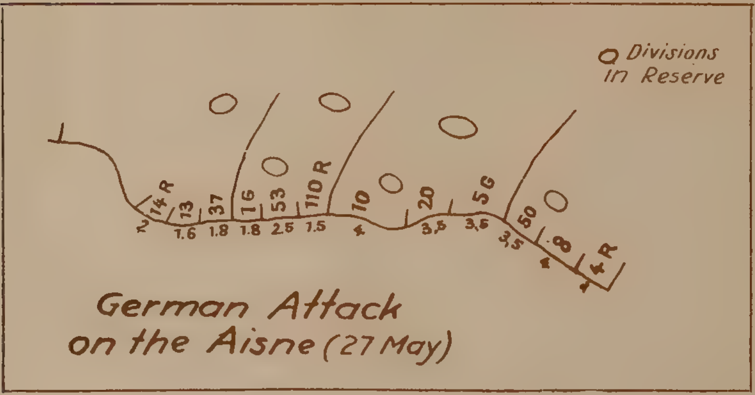
The German Offensive on Verdun in 1916




Proisy
Rue d'Ermich
Romery
Wiège-Faty
Rue Gythin
Rue Marais
Rue du Bois
Rue du Rieux
le Sourd
Rue des Fontaines
Colonfay
Puisieux et Clanlieu
12 hours
15 hours
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Sons
Chatillon
Thenailles

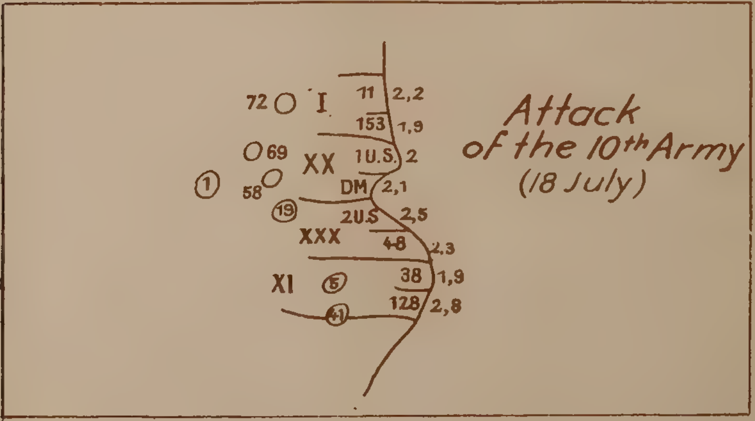
Map No 18

FRONTS OF ATTACK, 1918

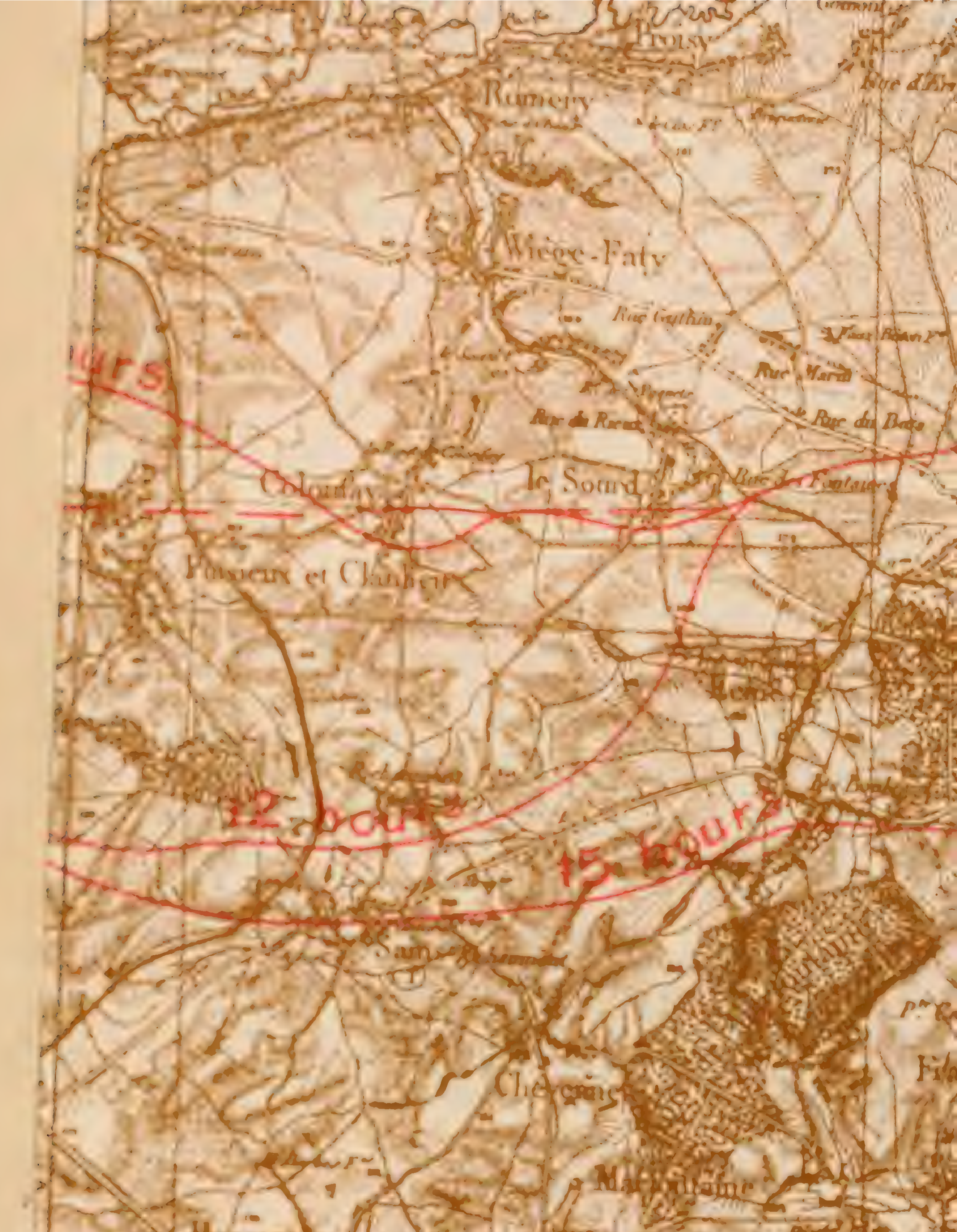


German Attack on the Aisne (27 May)

Scale 1: 320,000

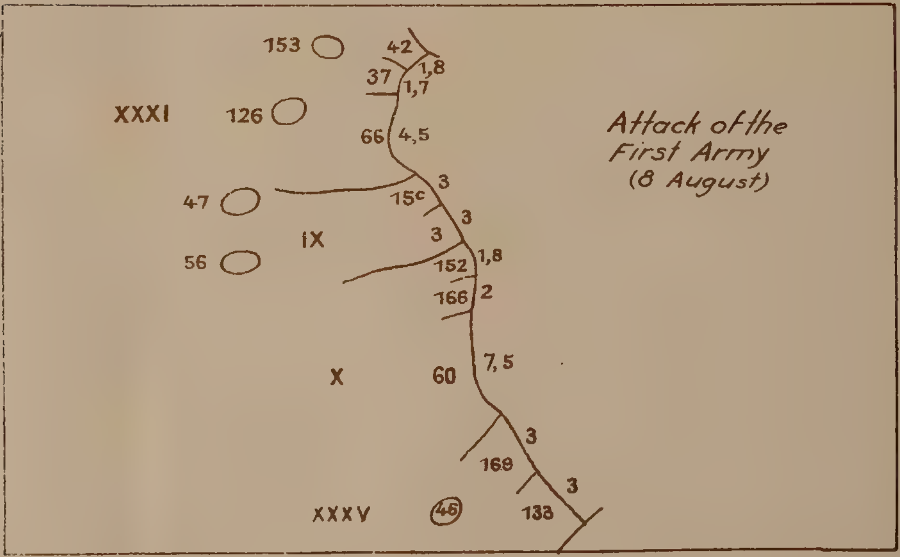


Attack of the 10th Army (18 July)

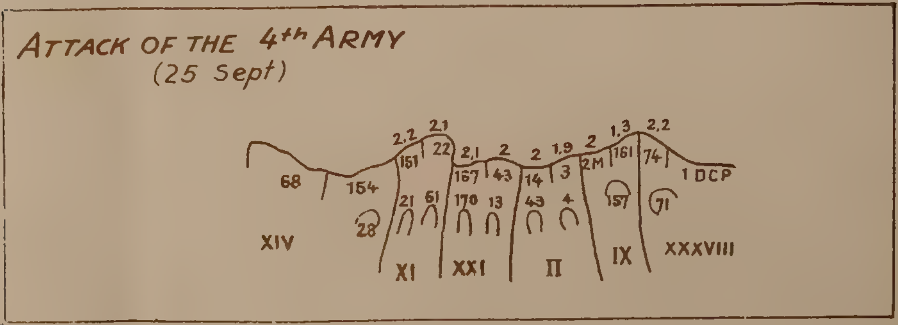

Proisy
Romery
Wiège-Faty
Rue Gythine
Rue Marat
Rue du Bois
Colonfay
le Sourd
Puisieux et Clanlieu
urs
12 hours
15 hours
Sains
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon
Thiernu

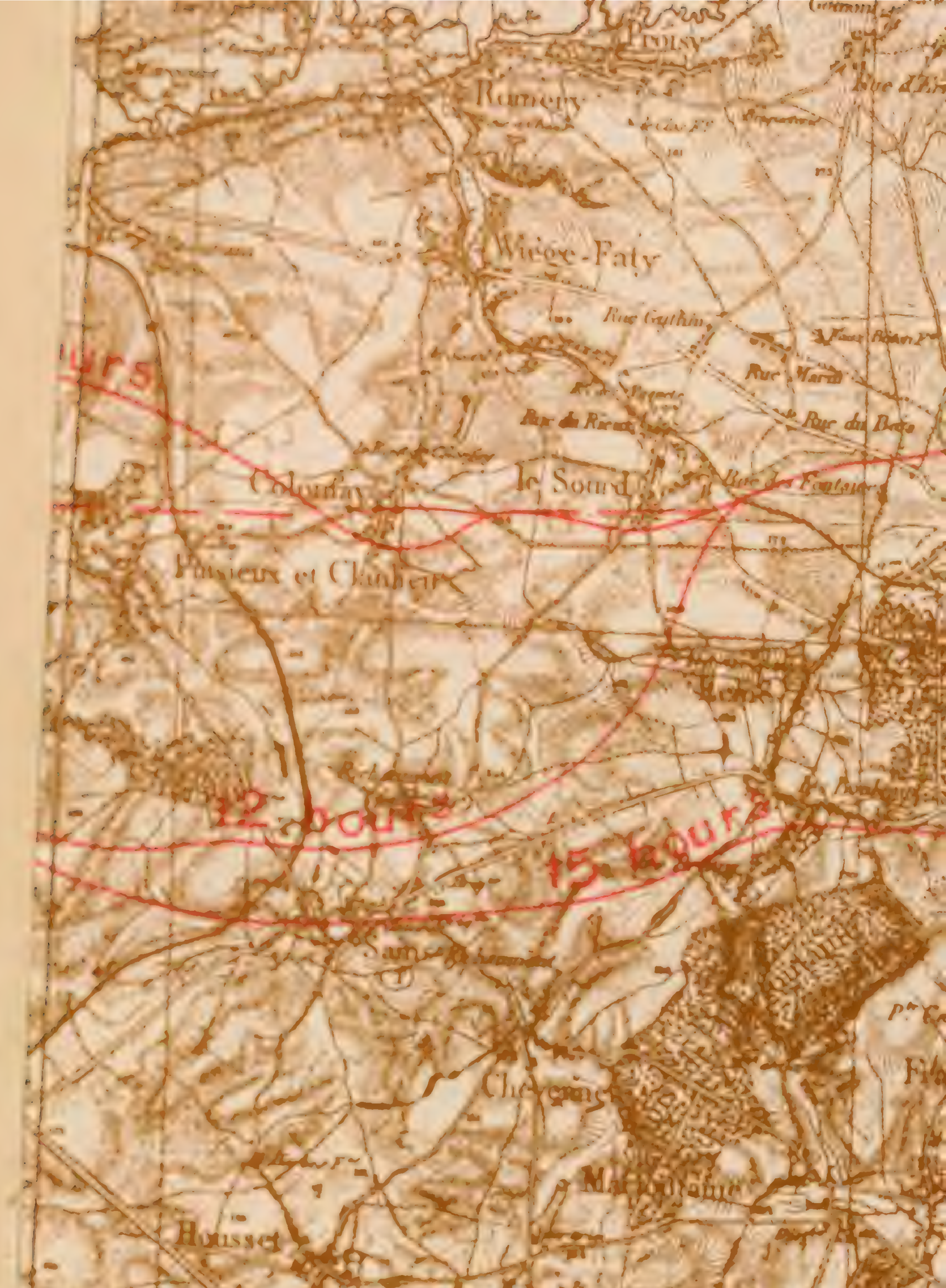
Map No 19

FRONTS OF ATTACK, 1918

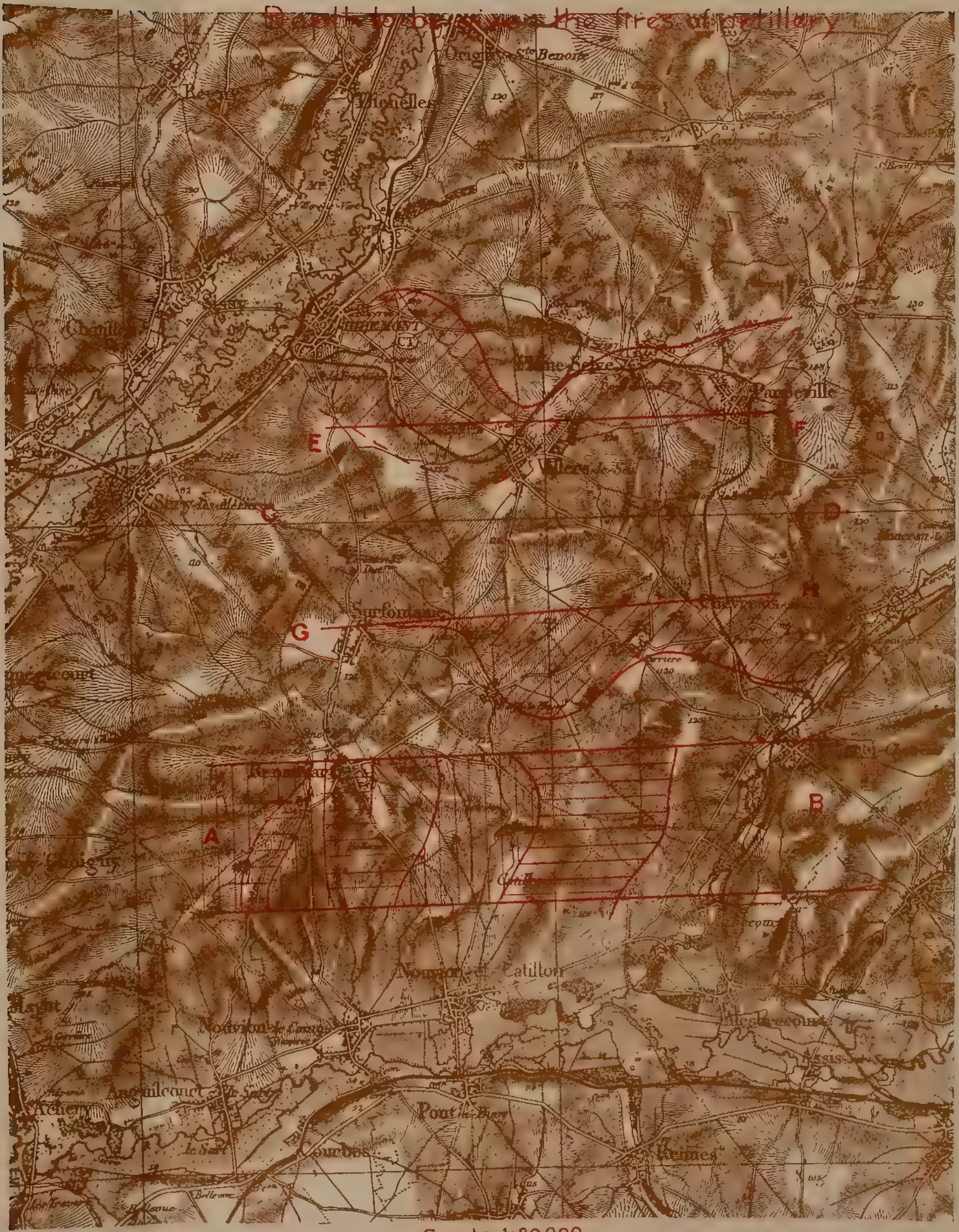


Scale 1:320,000

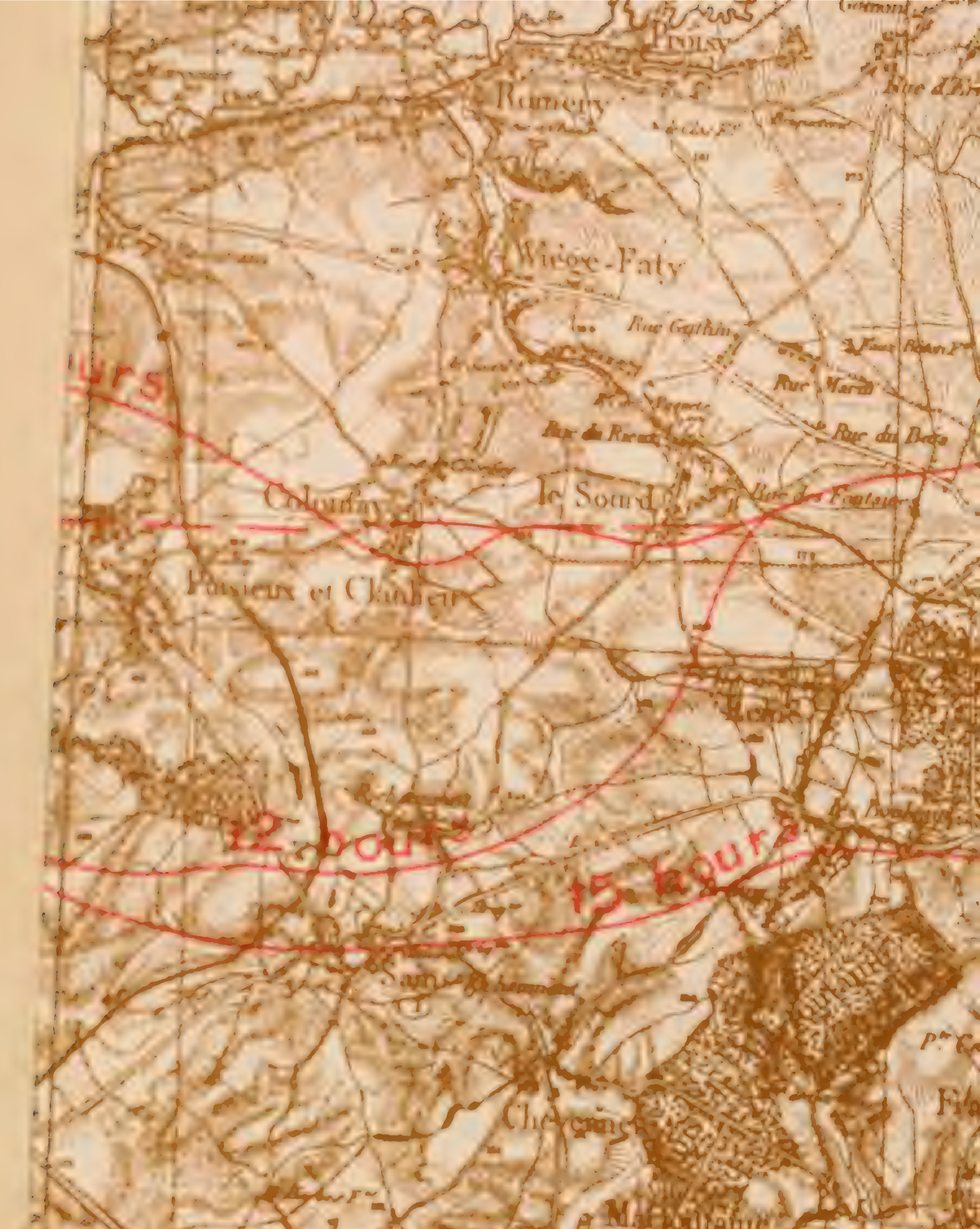



Romery
Wiège-Faty
Rue Marin
Rue du Bois
urs
Colonfay
le Sourd
Puisieux et Clanlieu
12 hours
15 hours
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Thiernu

Sketch No20

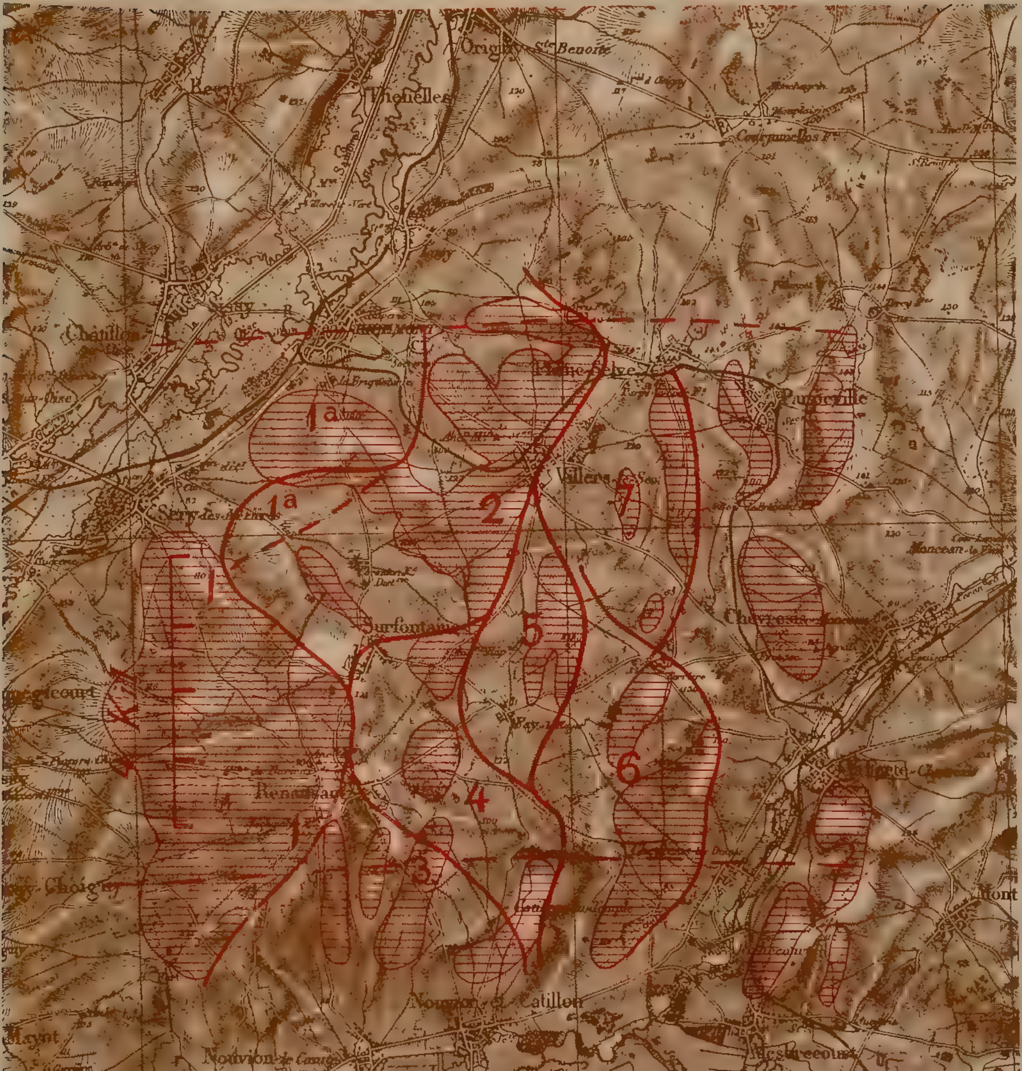


Scale 1:80,000

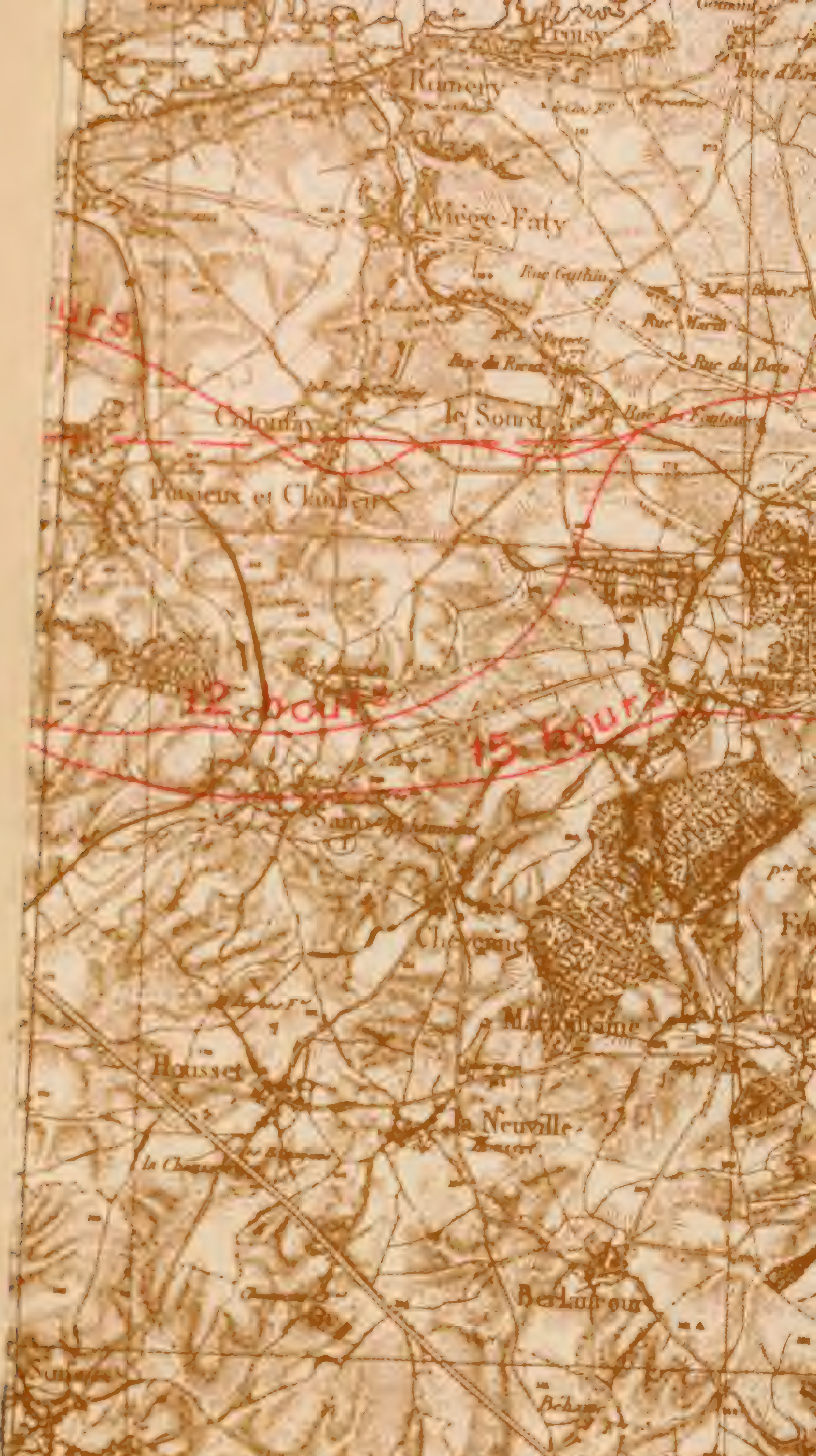

Proisy
Romery
Wiège-Faty
Colonfay
le Sourd
Puisieux et Clanlieu
urs
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon
Thiernu

Sketch No 21

Plan of conquest of the ground

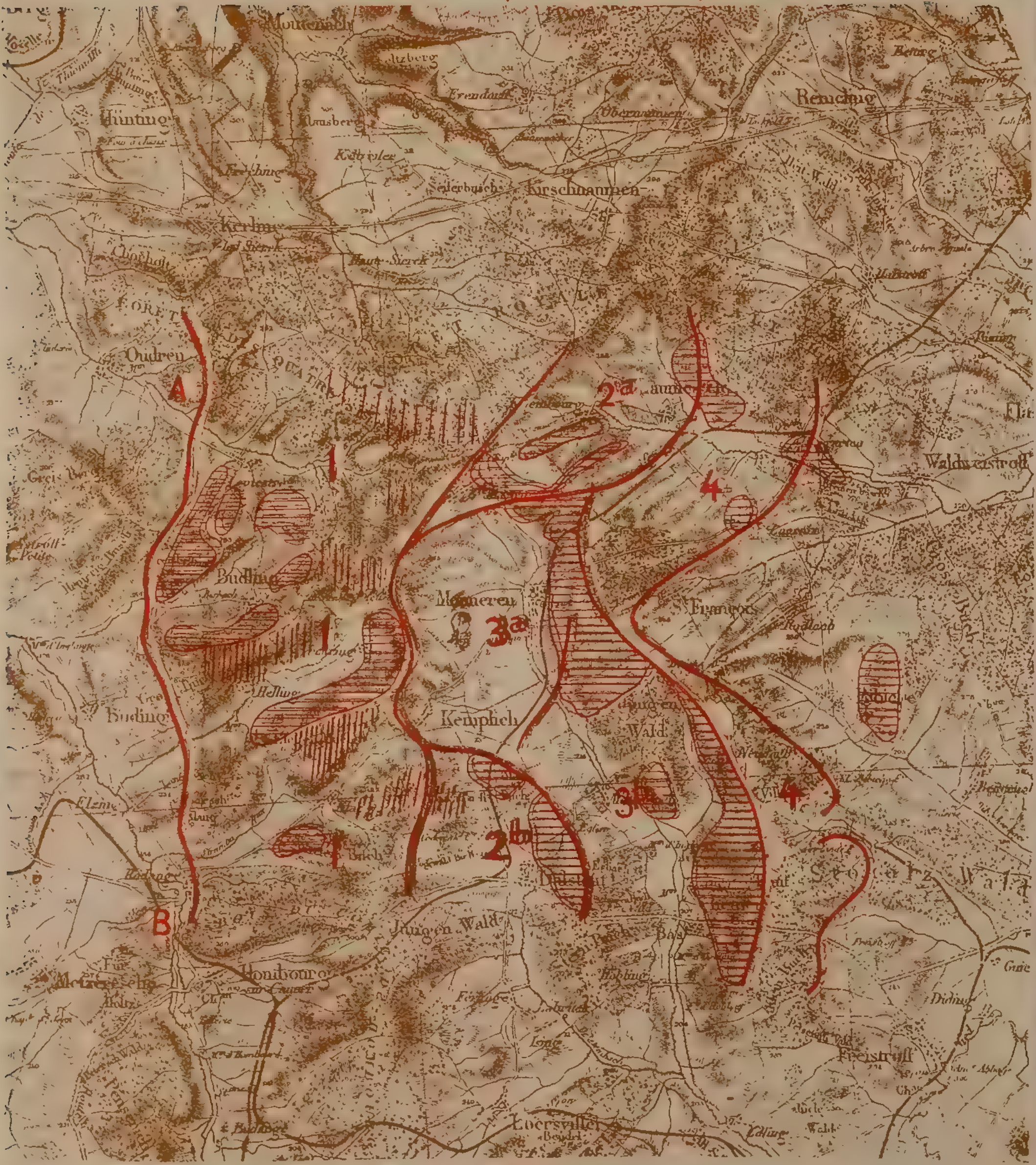


Scale 1:80 000

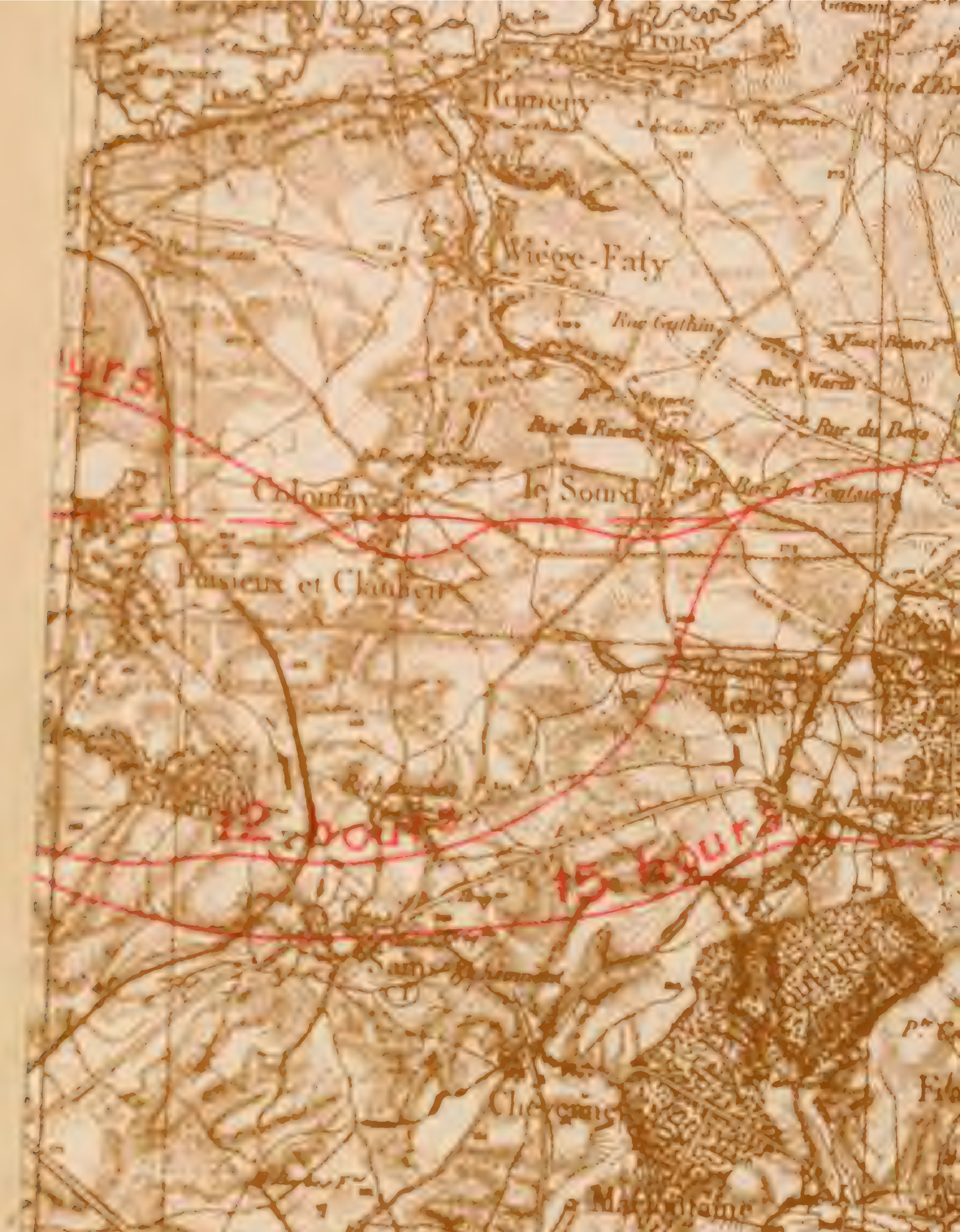

Proisy
Romery
Wiège-Faty
urs
Colonfay
le Sourd
Puisieux et Clanlieu
12 hours
15 hours
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon
Thiernu

Sketch Nº 22

Plan of conquest of the ground

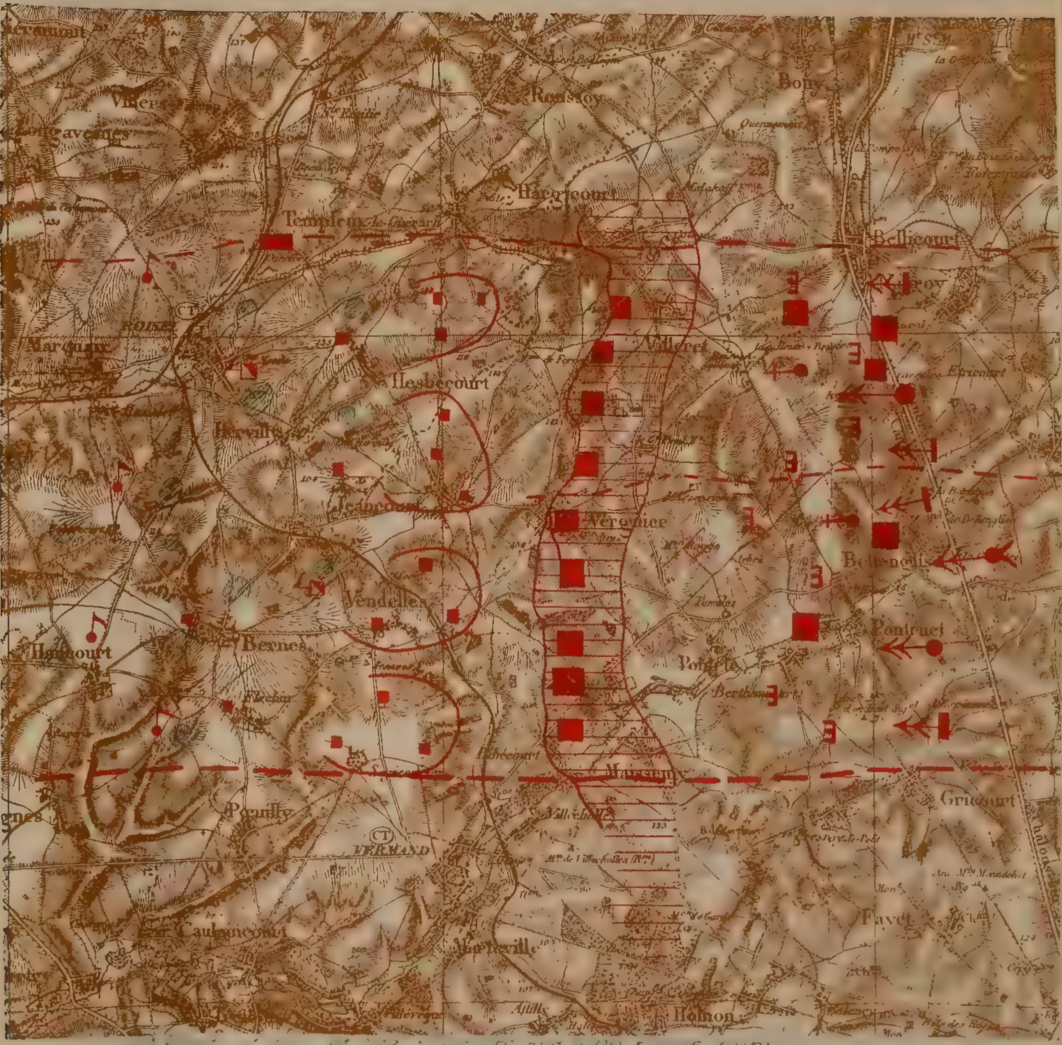


Scale 1:80,000


Proisy
Romery
Wiège-Faty
Rue Guthin
Rue Marin
Rue du Bois
Rue du Riez
urs
Colonfay
le Sourd
Puisieux et Clanlieu
12 jours
15 jours
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
la Chaussée
Berlancourt
Béhaine
Chatillon
Thenailles

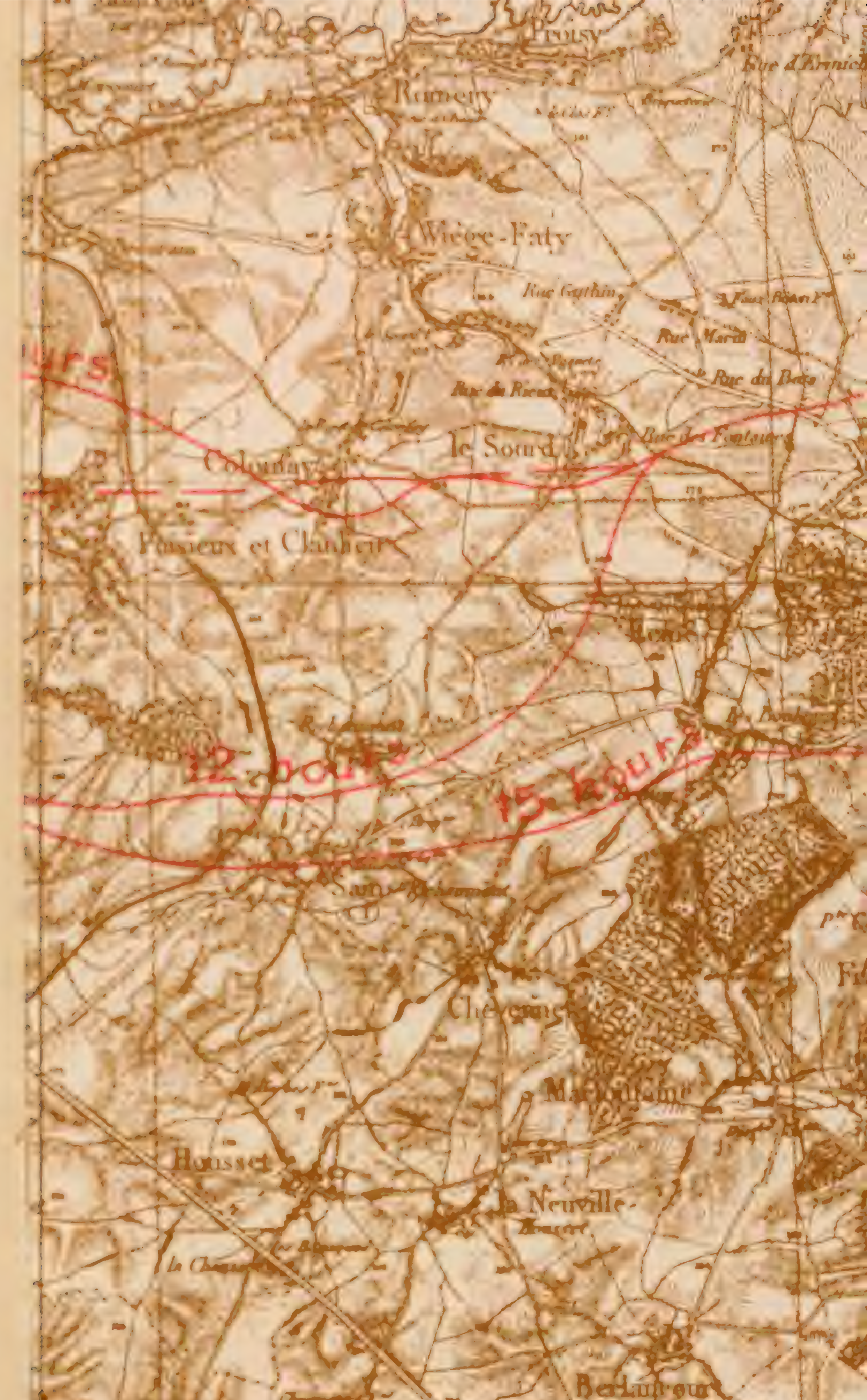
Sketch No 23

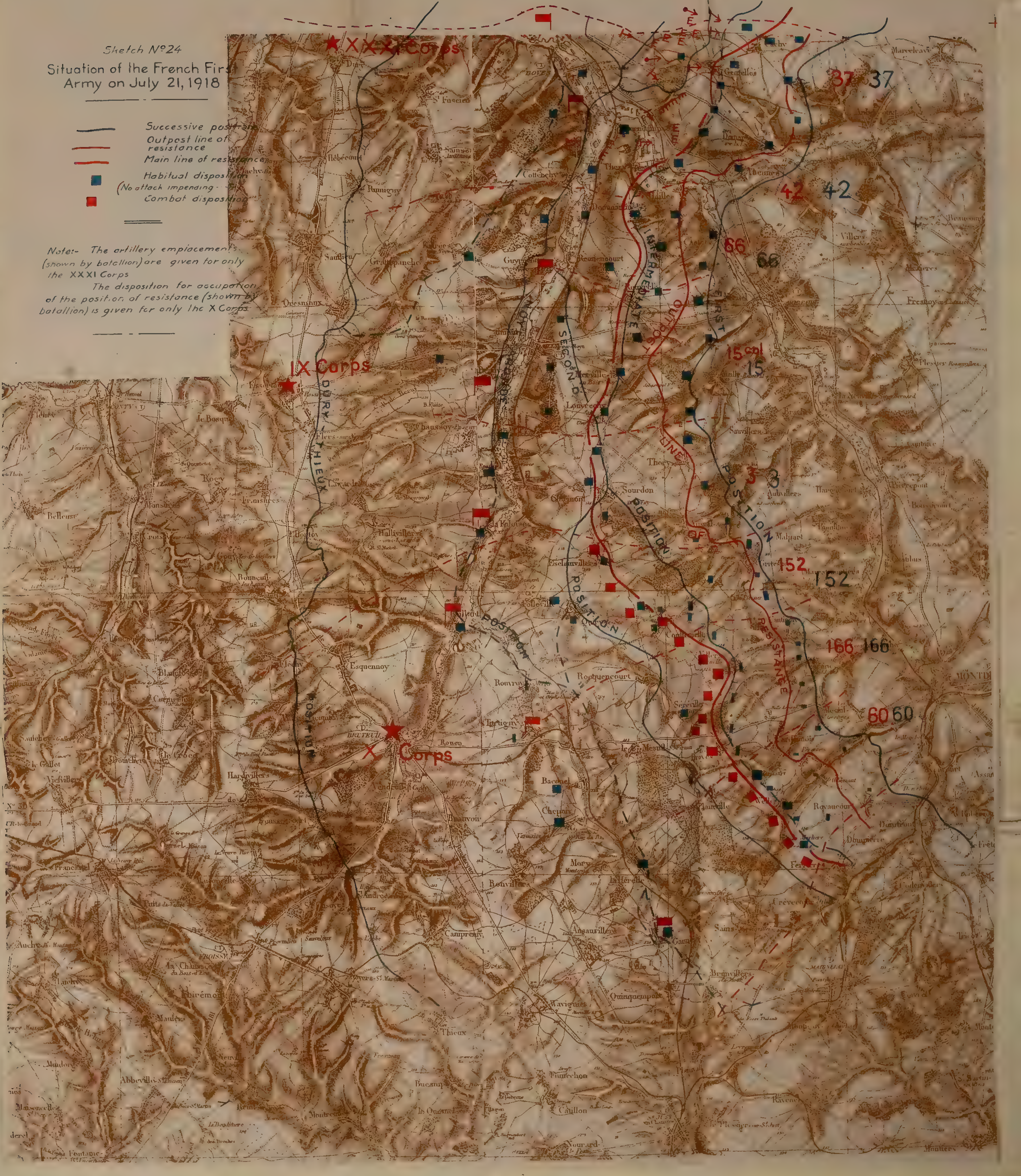
Outposts



[illegible] and long range guns.
(maximum range)

Scale 1:80,000


Proisy
Romery
Wiège-Faty
Rue Marin
Rue du Bois
le Sourd
Colonfay
Puisieux et Clanlieu
12 hours
15 hours
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chaillon
Thier



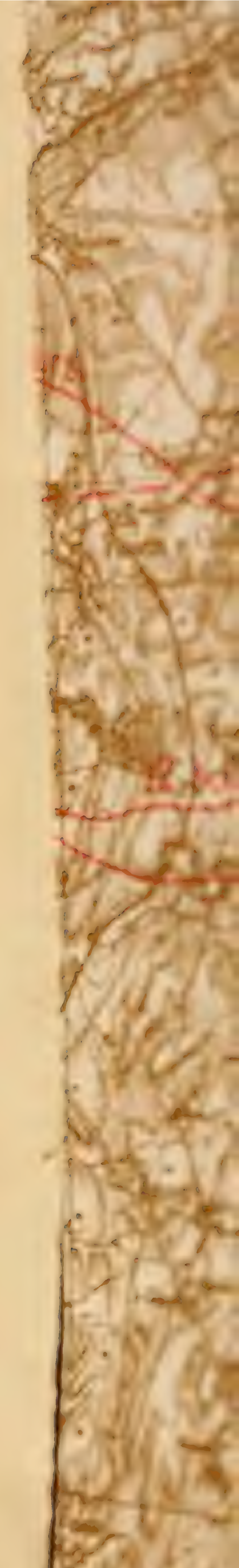
Sketch No 24

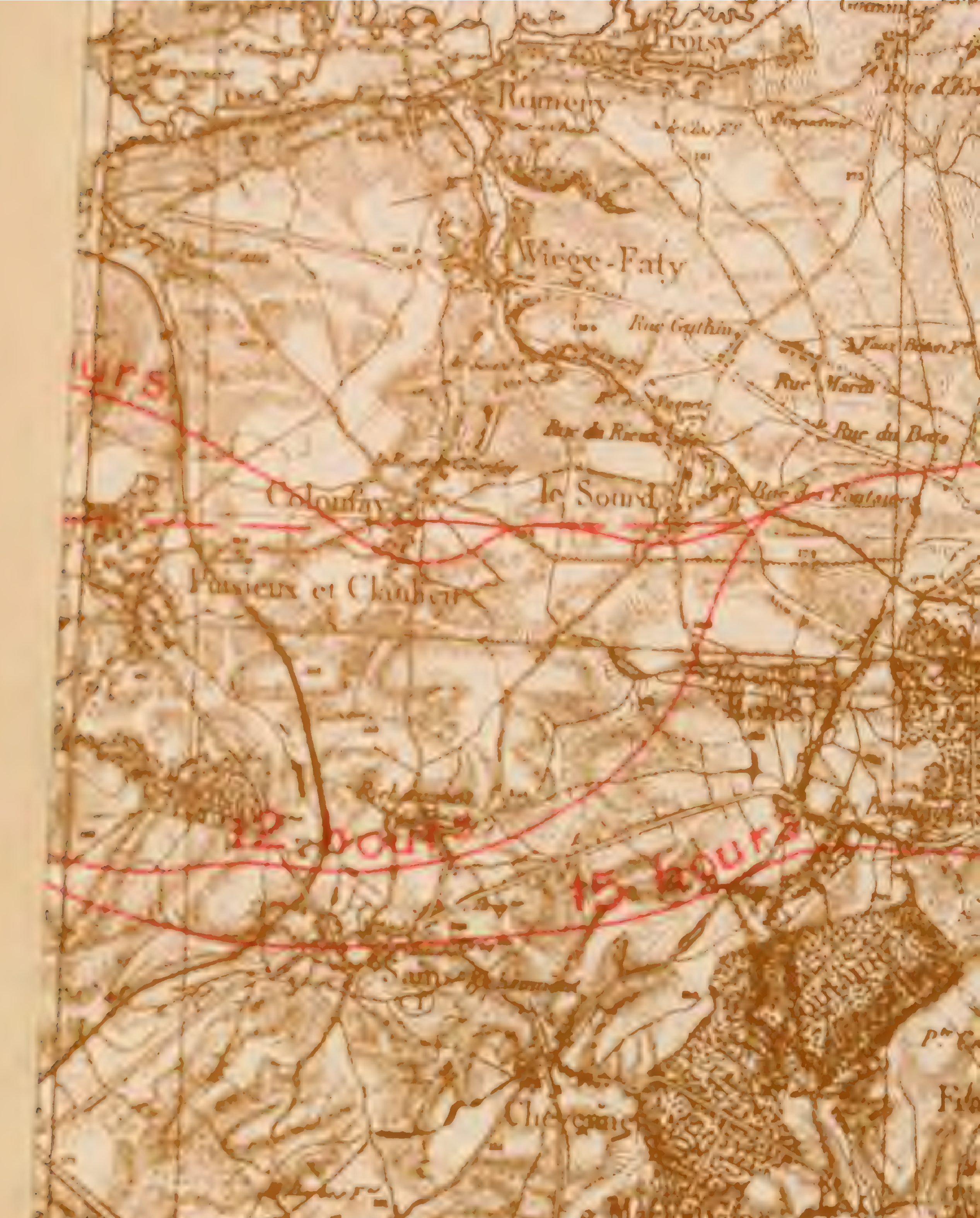
Situation of the French First Army on July 21, 1918

Successive positions
Outpost line of resistance
Main line of resistance
🟦 Habitual disposition (No attack impending-
🟥 Combat disposition

Note:- The artillery emplacements (shown by batallion) are given for only the XXXI Corps

The disposition for occupation of the position of resistance (shown by batallion) is given for only the X Corps

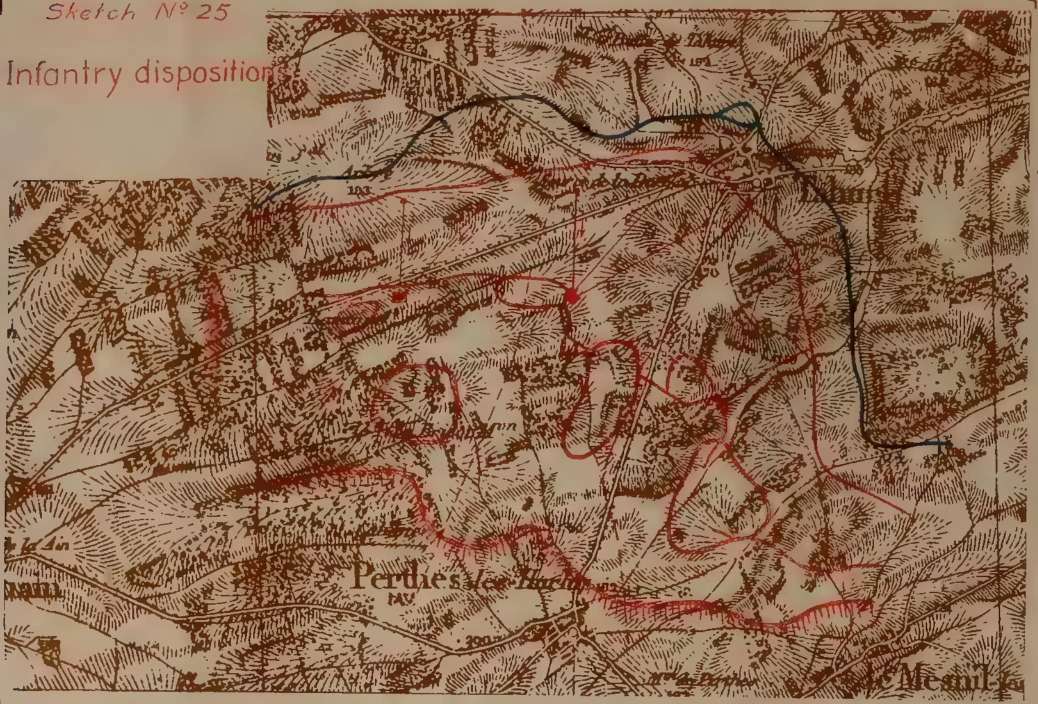



Proisy
Romery
Wiège-Faty
Rue Gythin
Rue Marin
Rue du Bois
Rue de Fontaine
Colonfay
le Sourd
Puisieux et Clanlieu
urs
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Châtillon

The outposts of the 43d Division on July 15th, 1918

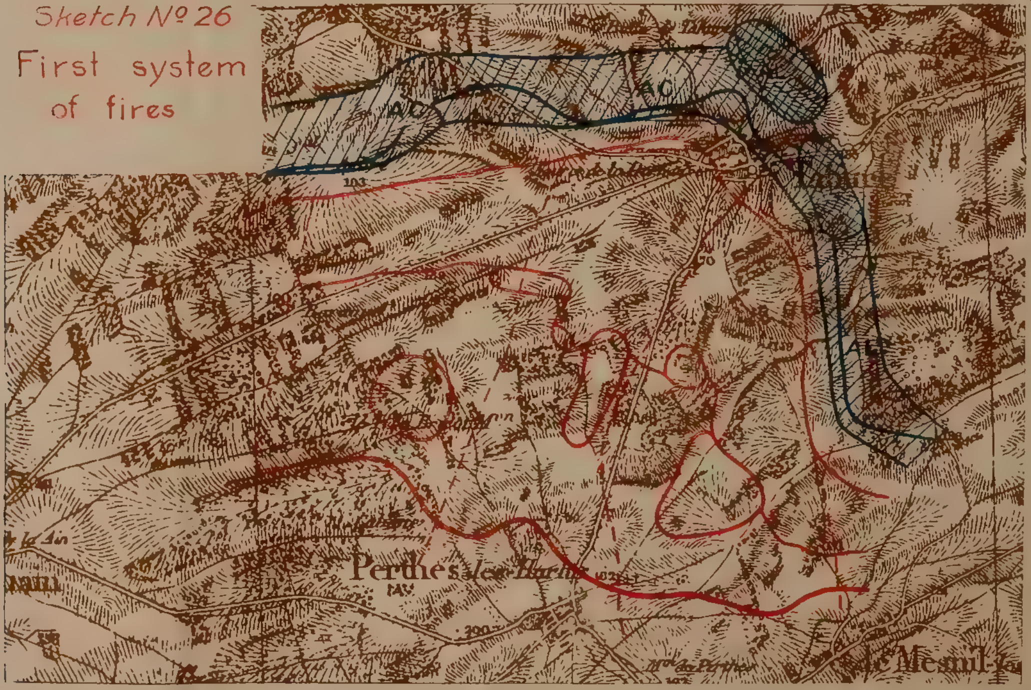
Sketch No 25

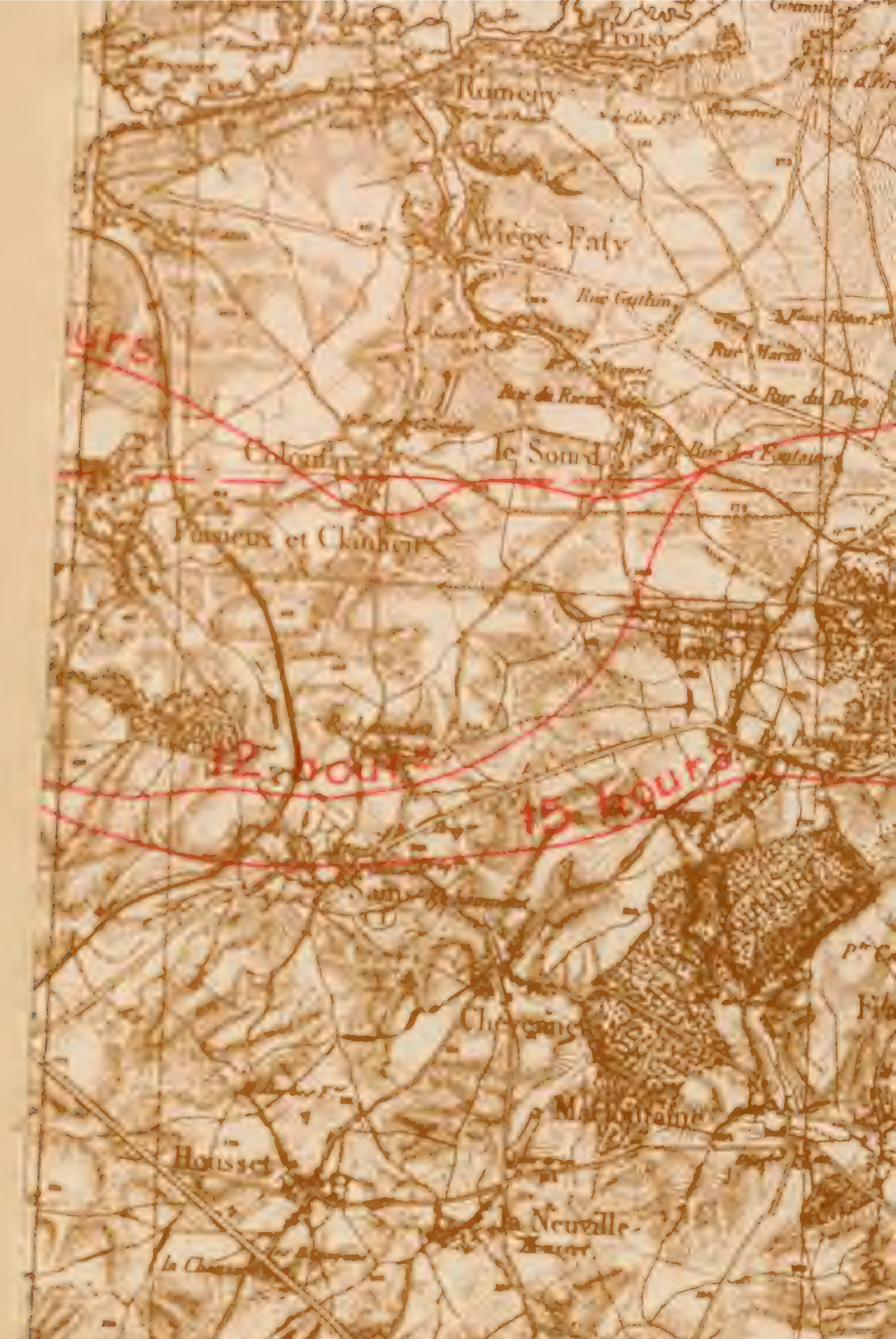
Infantry dispositions



Sketch No 26

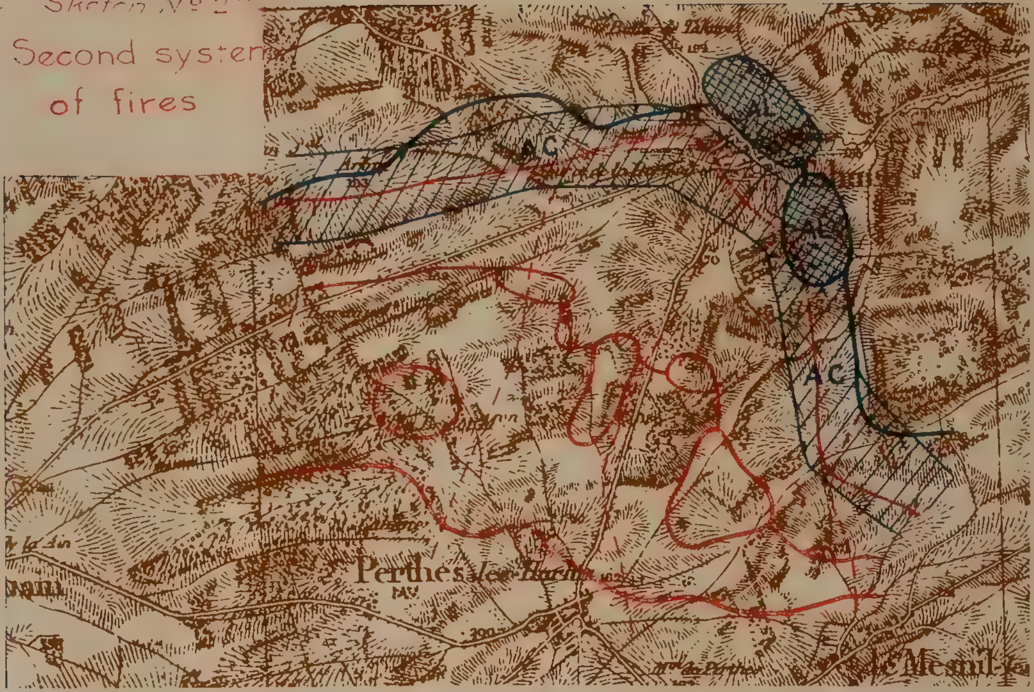
First system of fires




Proisy
Romery
Wiège-Faty
Rue Gauthier
Rue Marin
Rue du Bois
Rue du Rieux
le Sourd
Rue des Fontaines
urs
Colonfay
Puisieux et Clanlieu
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon

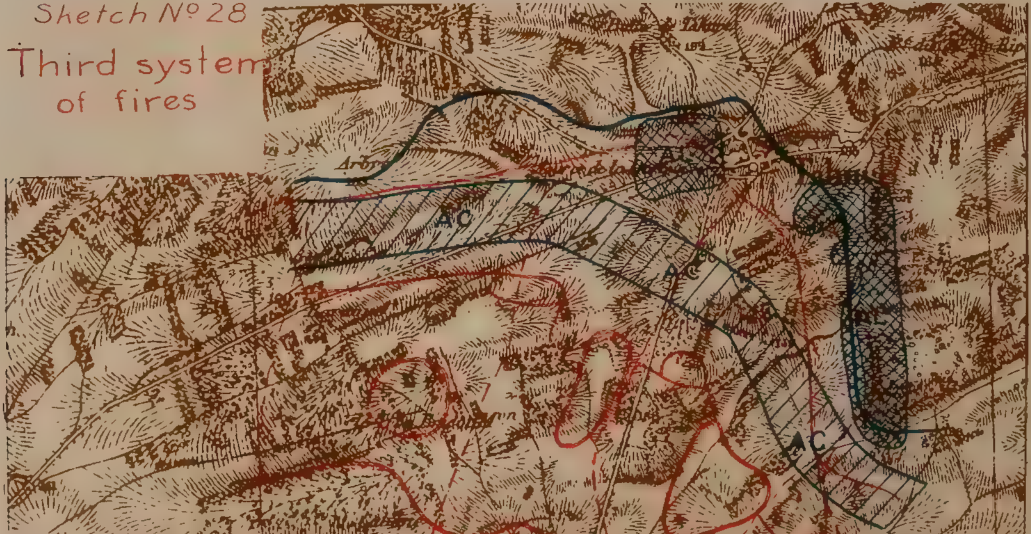
Sketch Nº 27

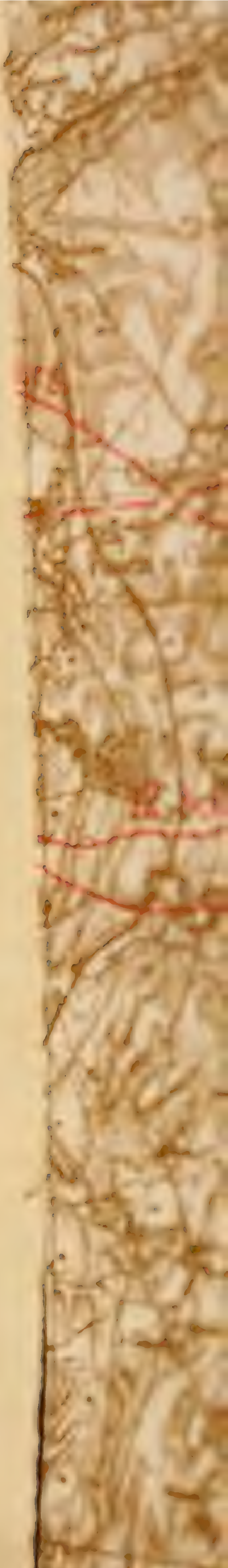
Second system of fires

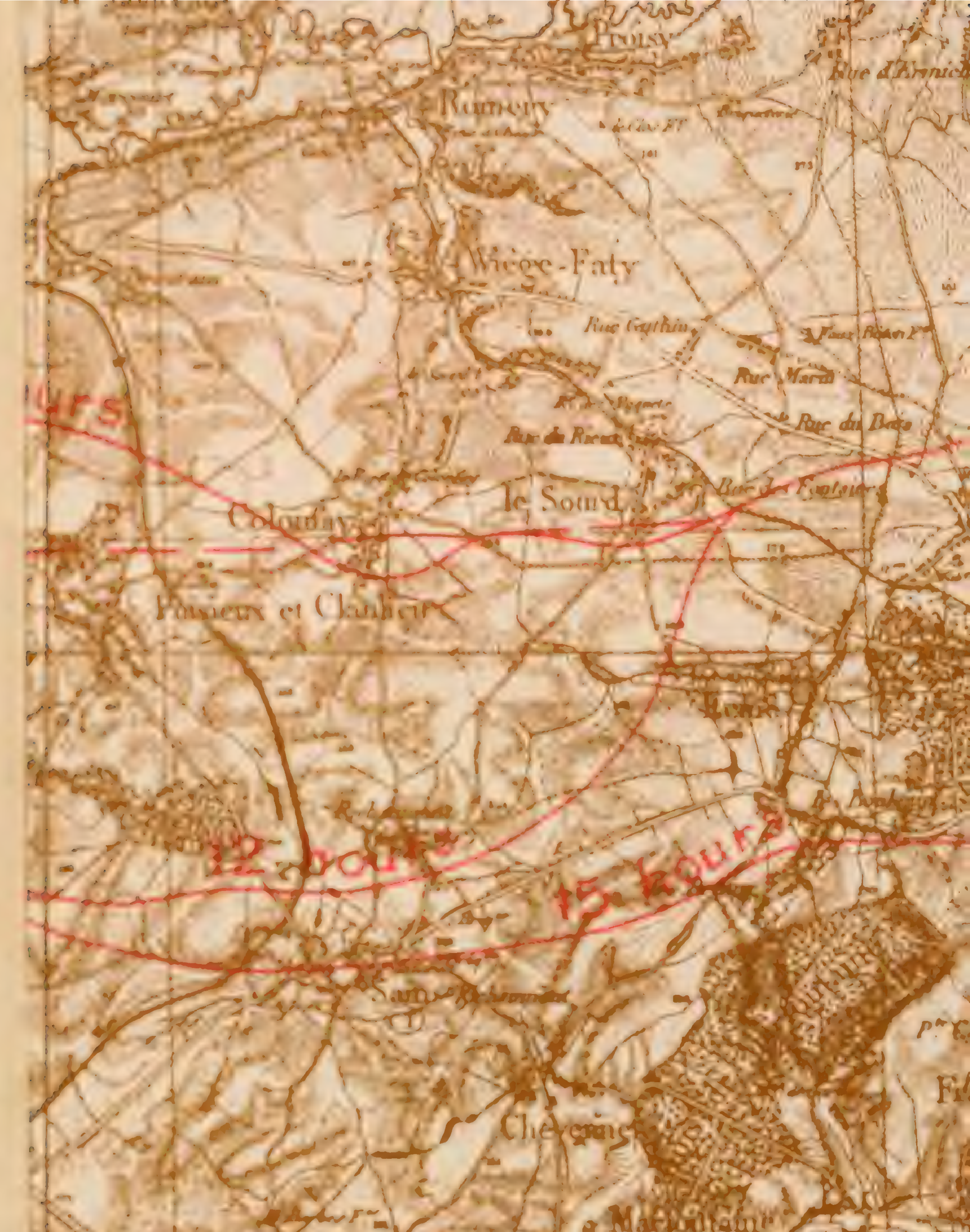


Sketch Nº 28

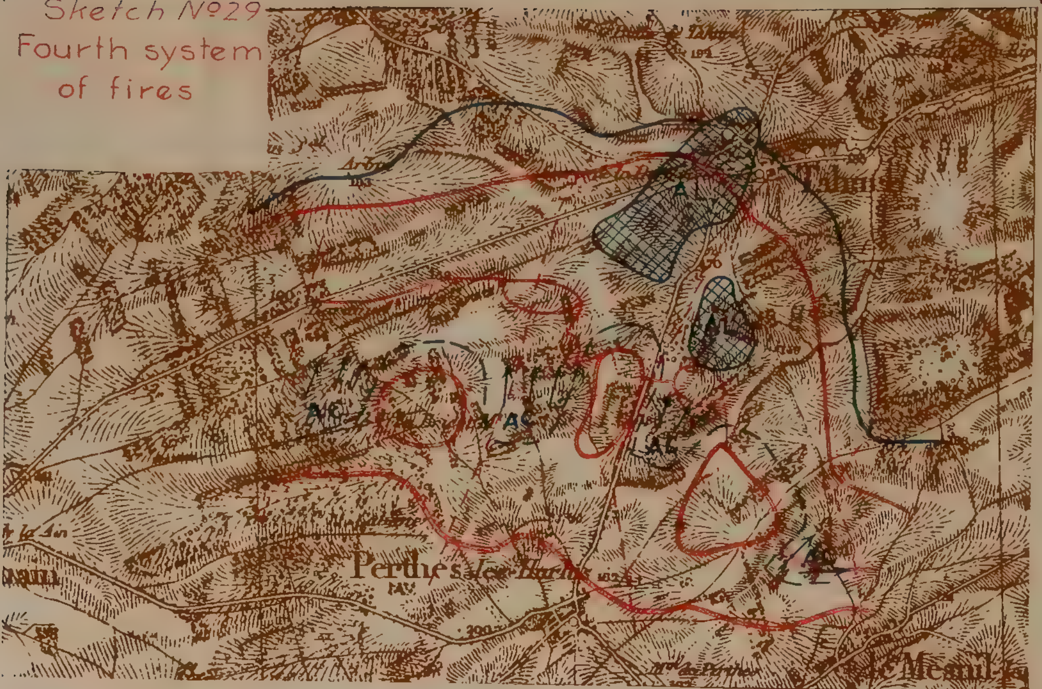
Third system of fires





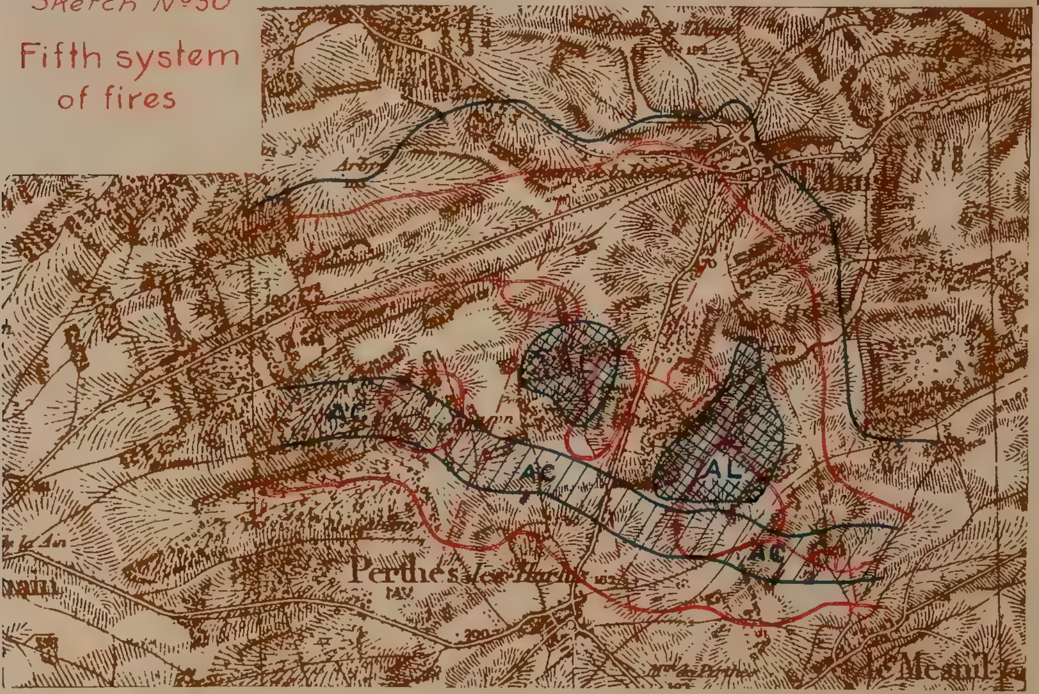

Proisy
Romery
Wiège-Faty
Rue Gathin
Rue Marié
Rue du Bois
Colonfay
le Sourd
Puisieux et Clanlieu
12 hours
15 hours
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon

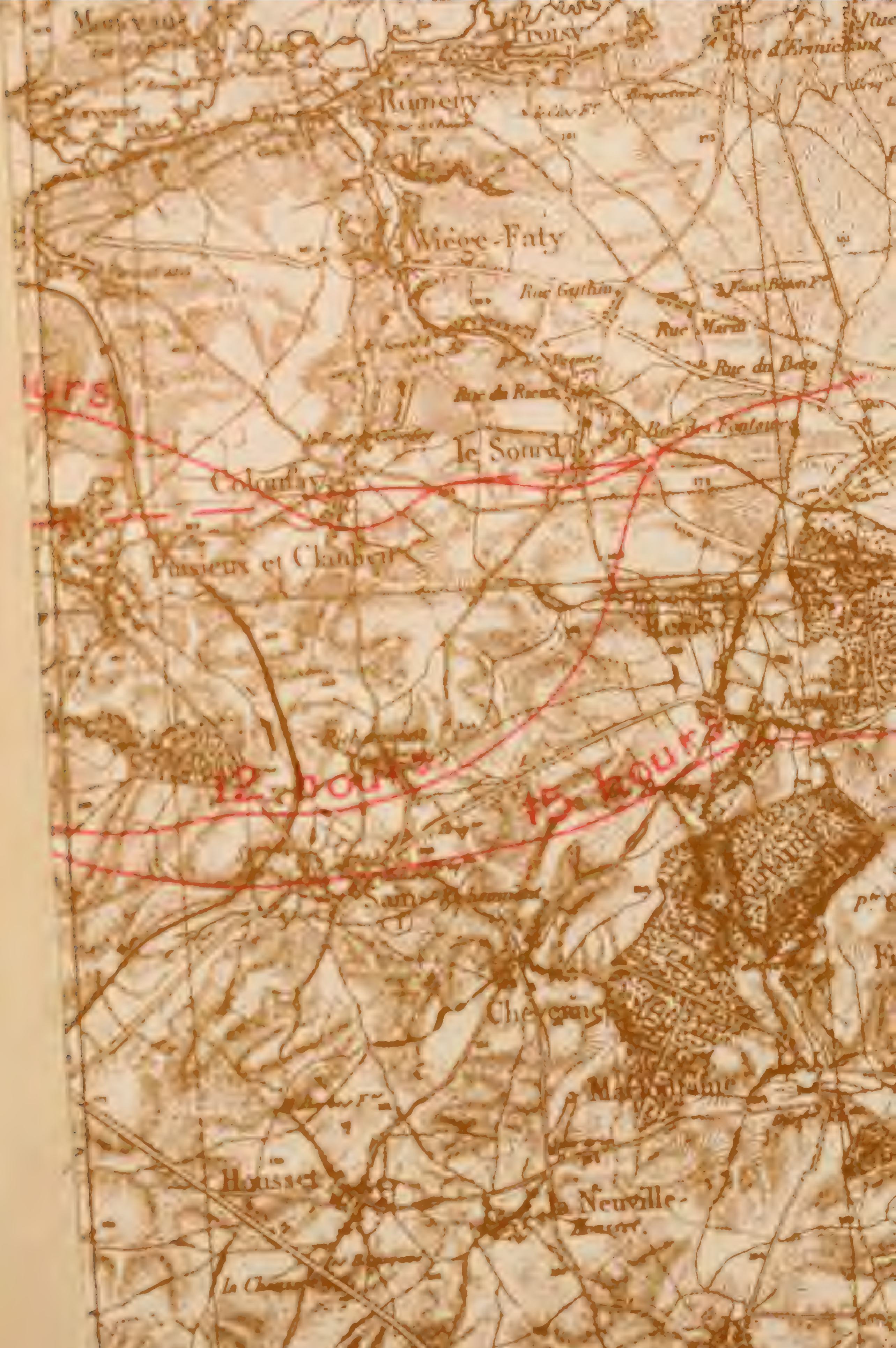
Sketch No 29
Fourth system of fires



Sketch No 30

Fifth system of fires

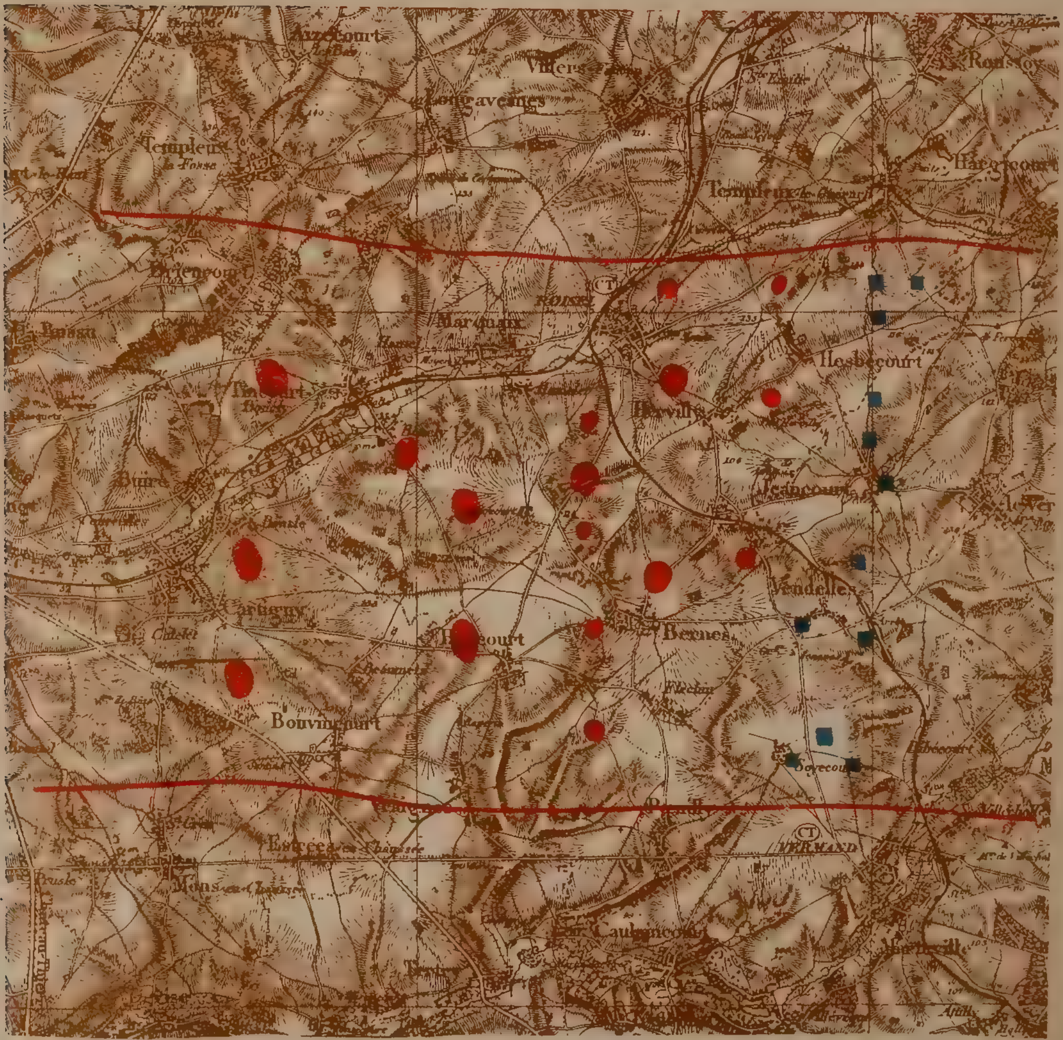



Proisy
Romery
Wiège-Faty
Rue Marais
Rue du Bois
le Sourd
Colonfay
Puisieux et Clanlieu
12 heures
15 heures
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
urs

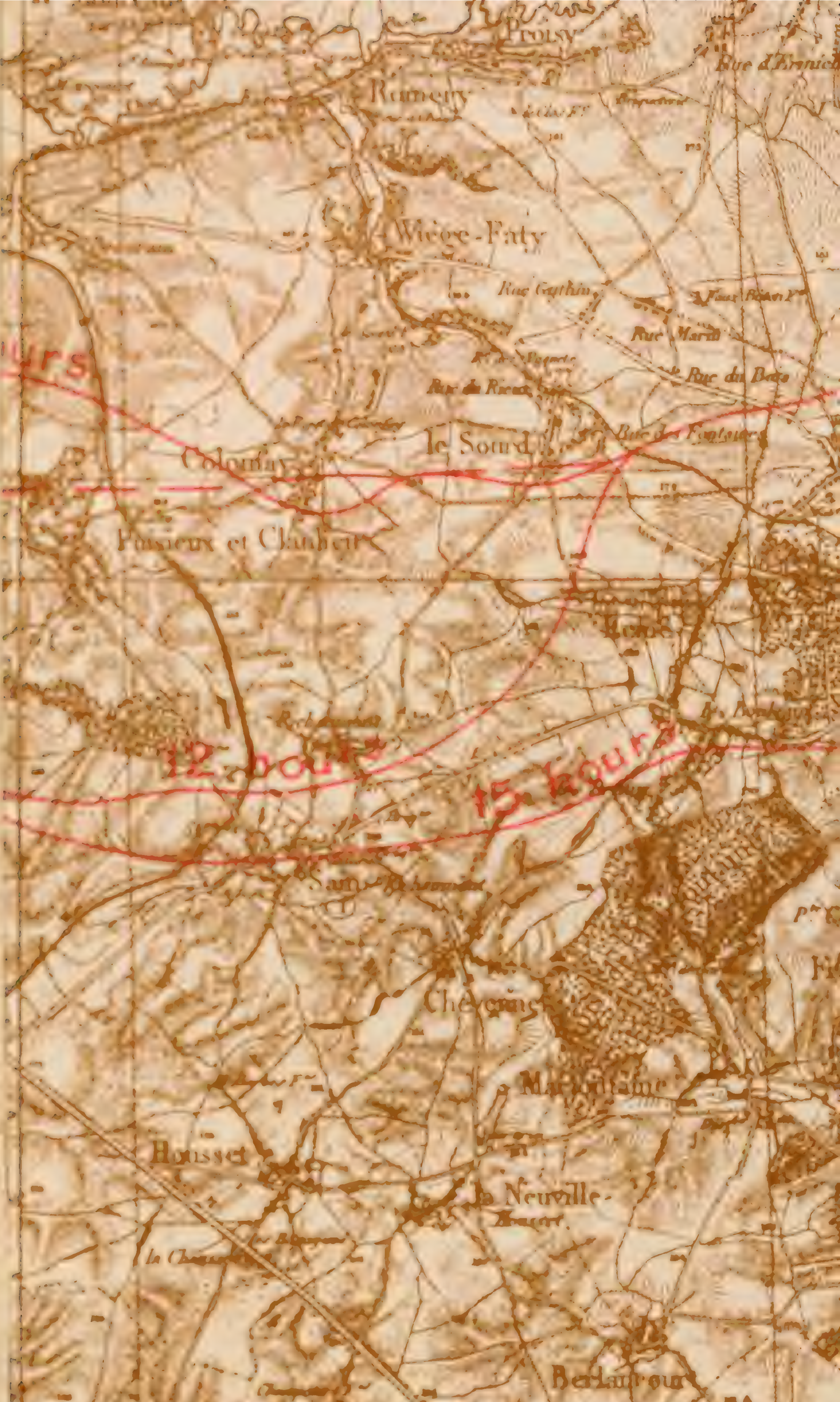
Sketch No. 31

Limit of range of the guns of the defensive

(See Sketch No. 23)

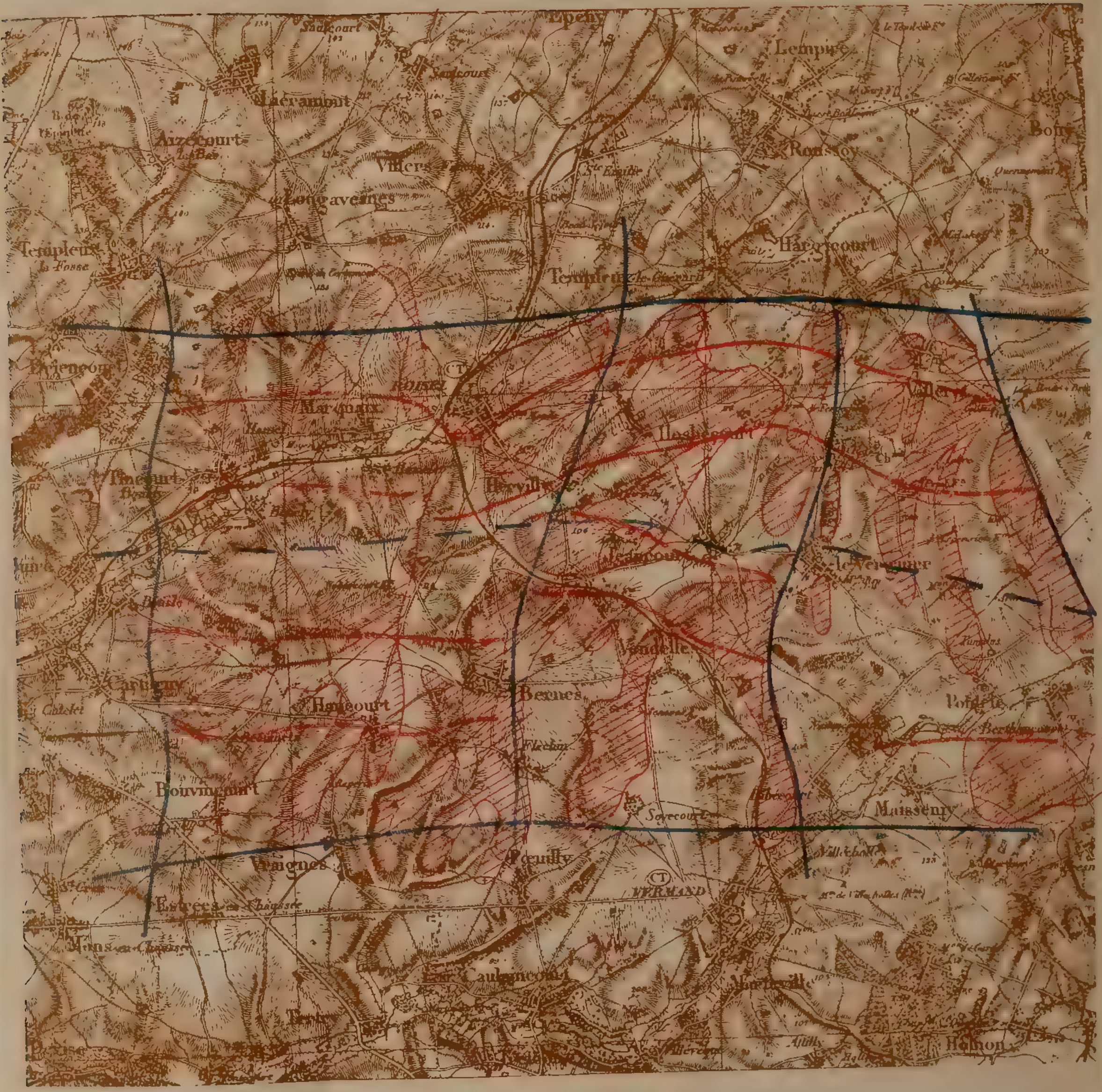


Scale 1:80,000

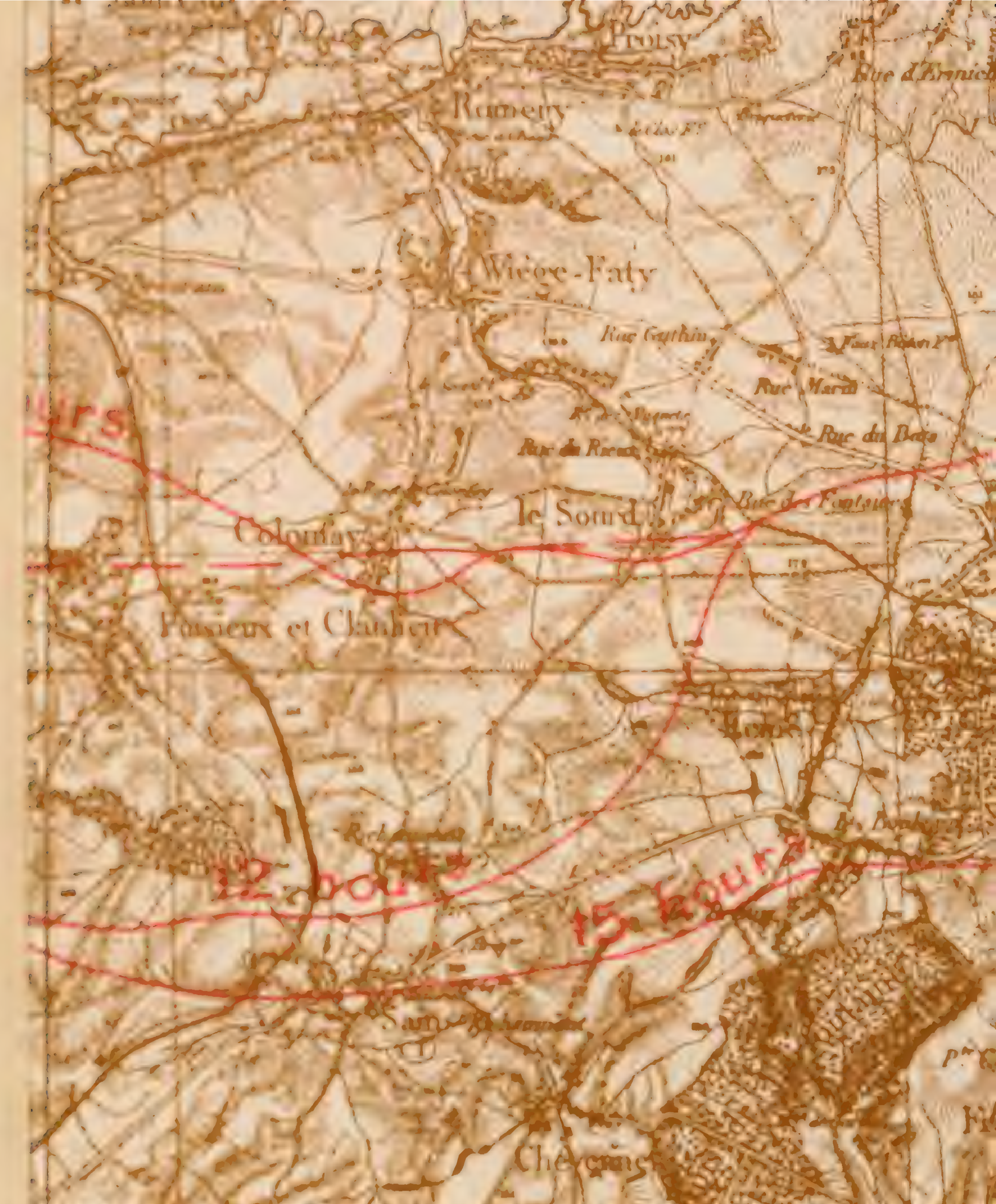

Proisy
Rue d'Ervnich
Romery
Wiège-Faty
Rue Gatthiu
Rue Marin
Rue du Bois
Rue du Rieux
le Sourd
Rue des Fontaines
Colonfay
Puisieux et Clanlieu
urs
12 hours
15 hours
Sains
Chevennes
Marfontaine
Housset
la Neuville-Housset
la Chaussée
Berlancourt
Béhaine
Thierh
Chatillon

Sketch N°32

Selection of directions of engagement

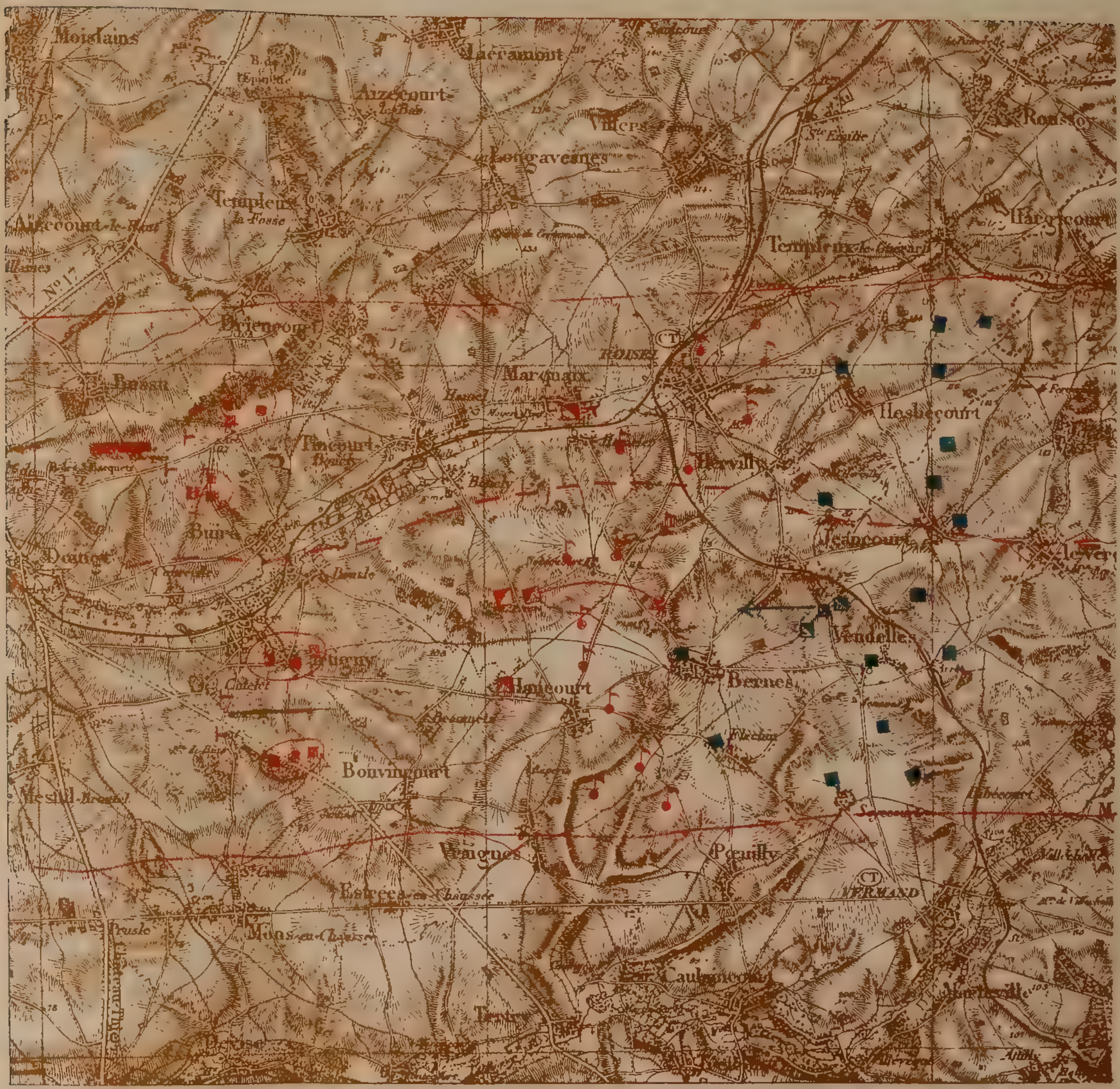


Scale 1:80 000

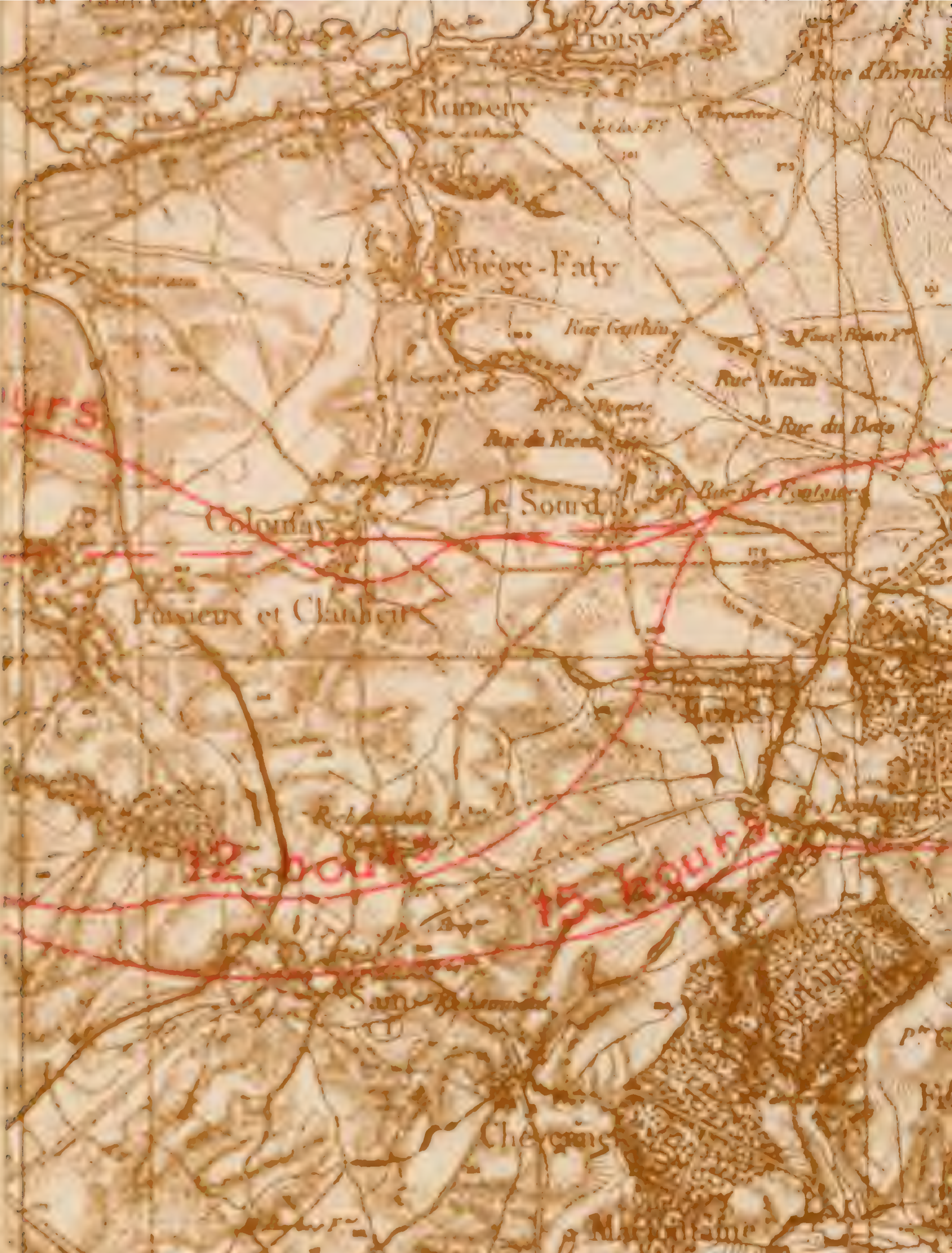

Proisy
Romery
Wiège-Faty
Rue Gathin
Rue Marin
Rue du Bois
Rue du Rieux
le Sourd
Colonfay
Puisieux et Clanlieu
12 hours
15 hours
Sains
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon

Sketch Nº 33

Gaining of contact by the cavalry

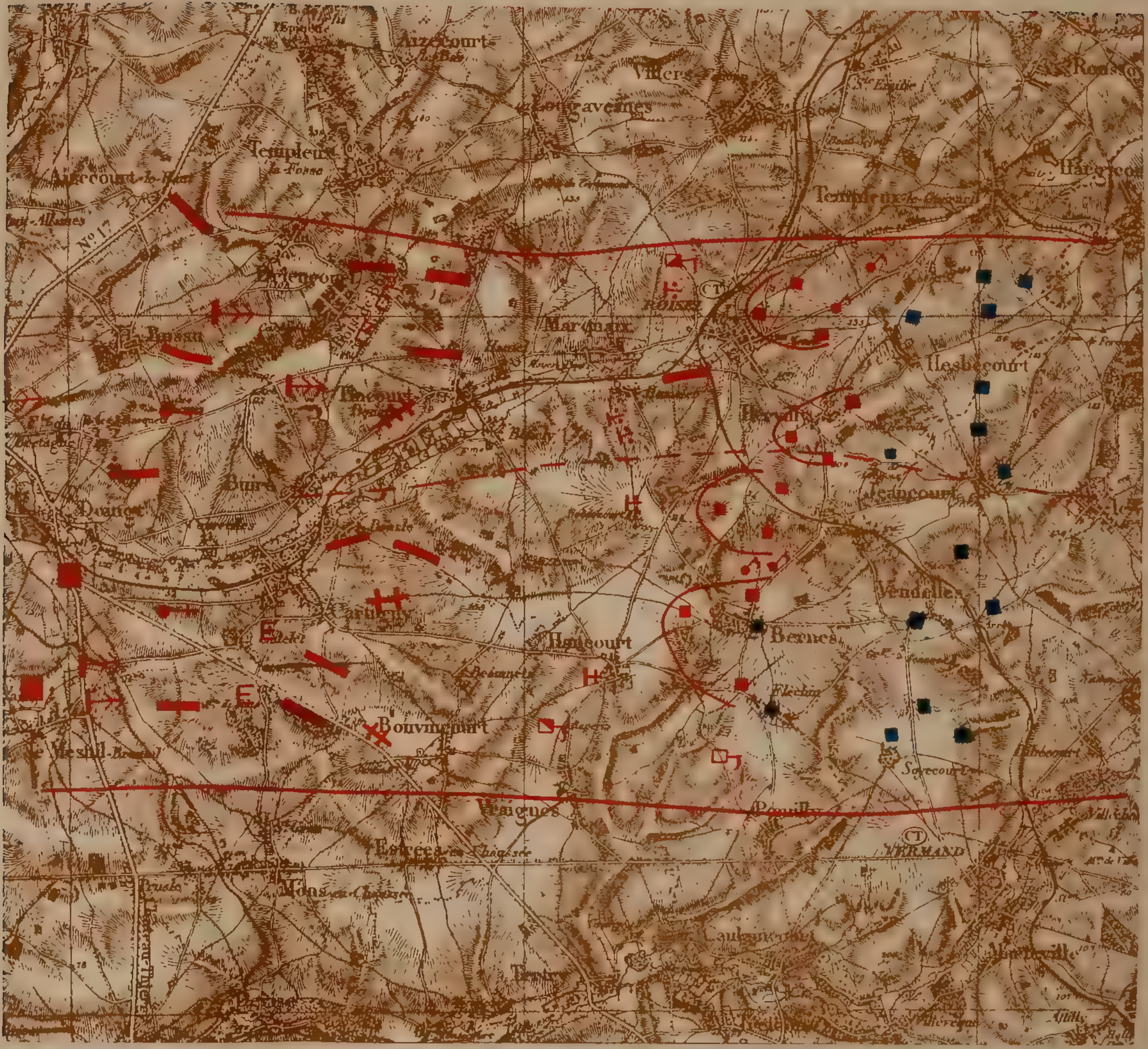


Scale 1:80000


Proisy
Romery
Wiège-Faty
Rue Gathin
Rue Marais
Rue du Bois
le Sourd
Colonfay
Puisieux et Clanlieu
urs
12 hours
15 hours
Chévennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chalandry
Thiern

Sketch Nº 34

Gaining of contact by the outposts



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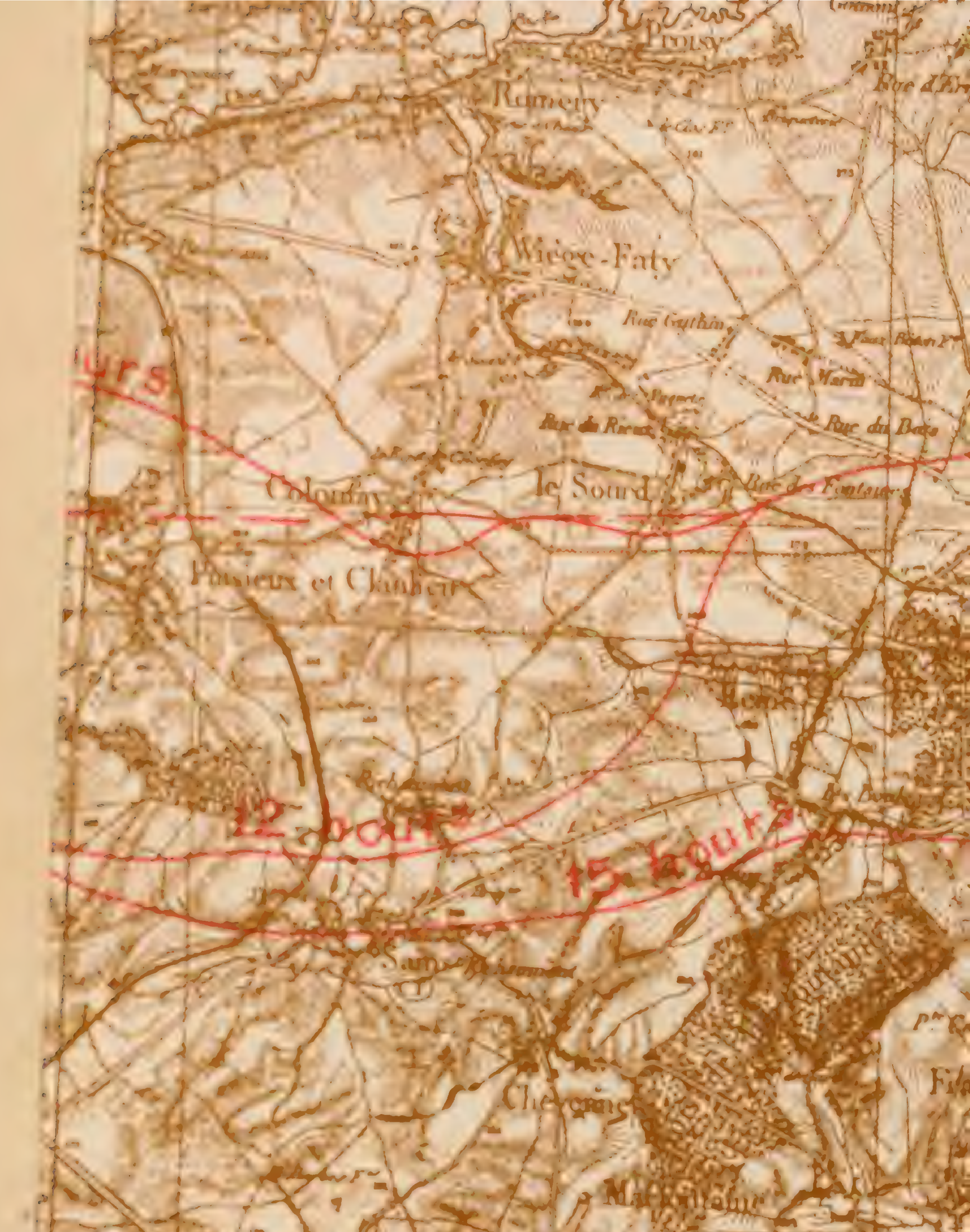
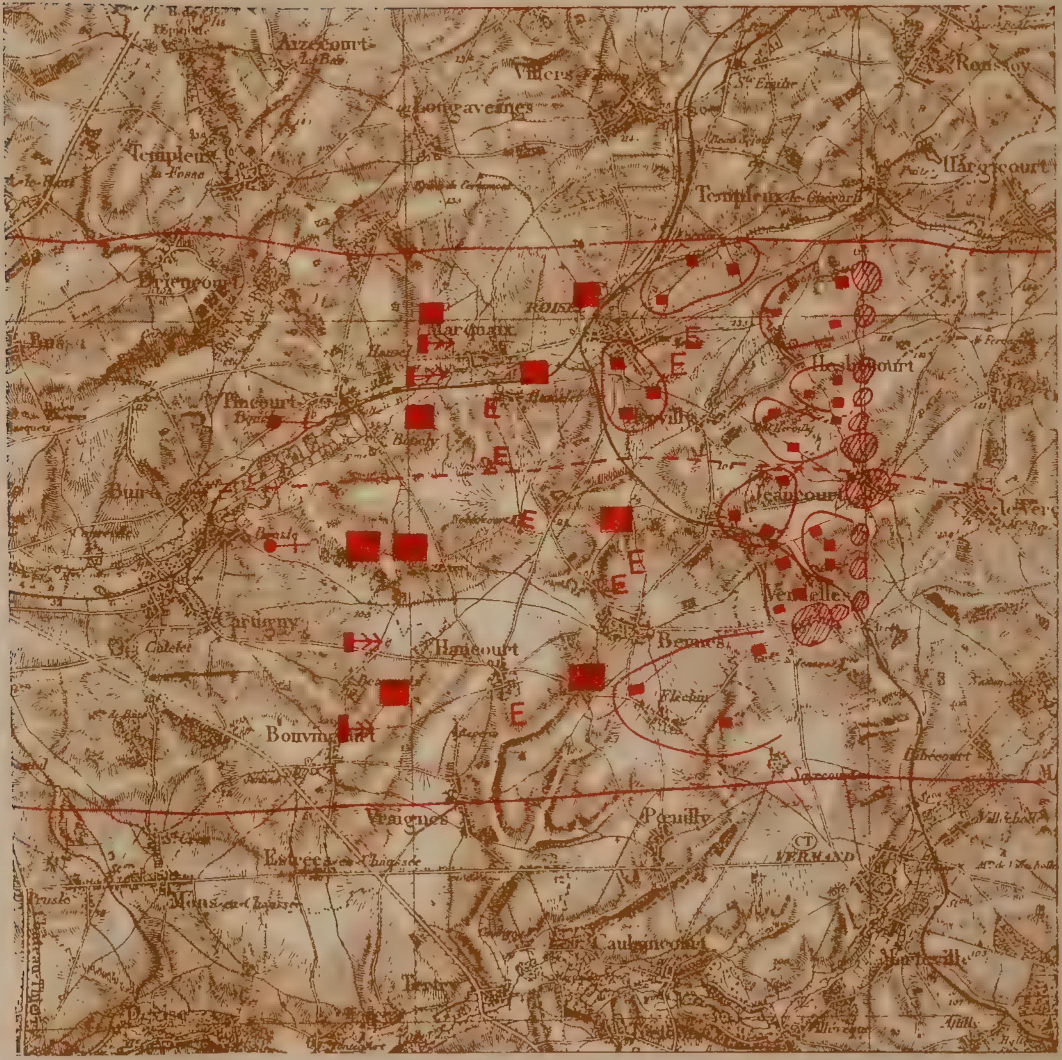

Proisy
Romery
Wiège-Faty
Rue Marin
Rue du Bois
le Sourd
Colonfay
Puisieux et Clanlieu
urs
12 hours
15 hours
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon

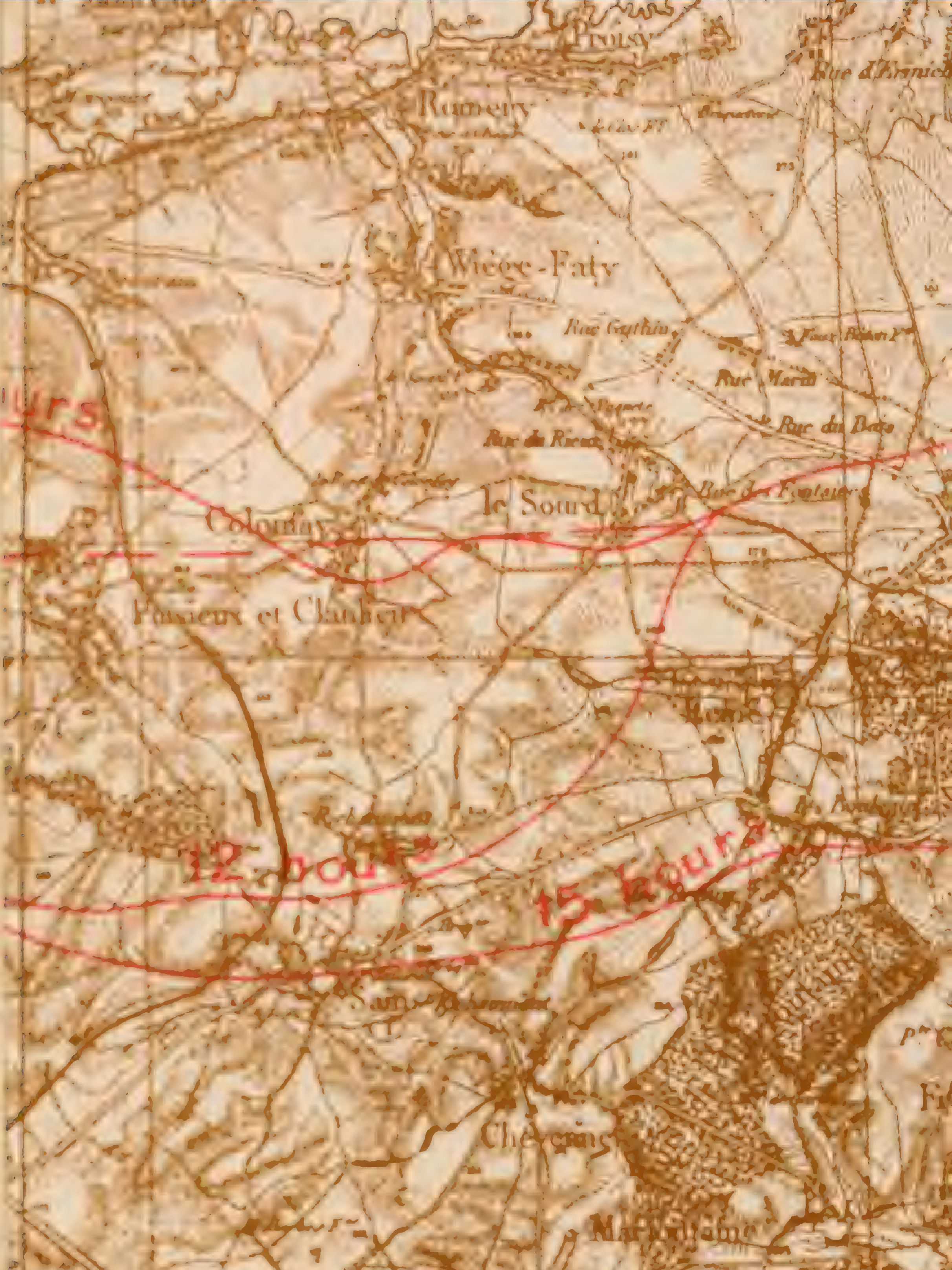
Sketch Nº 35

Verification of the value of the contact



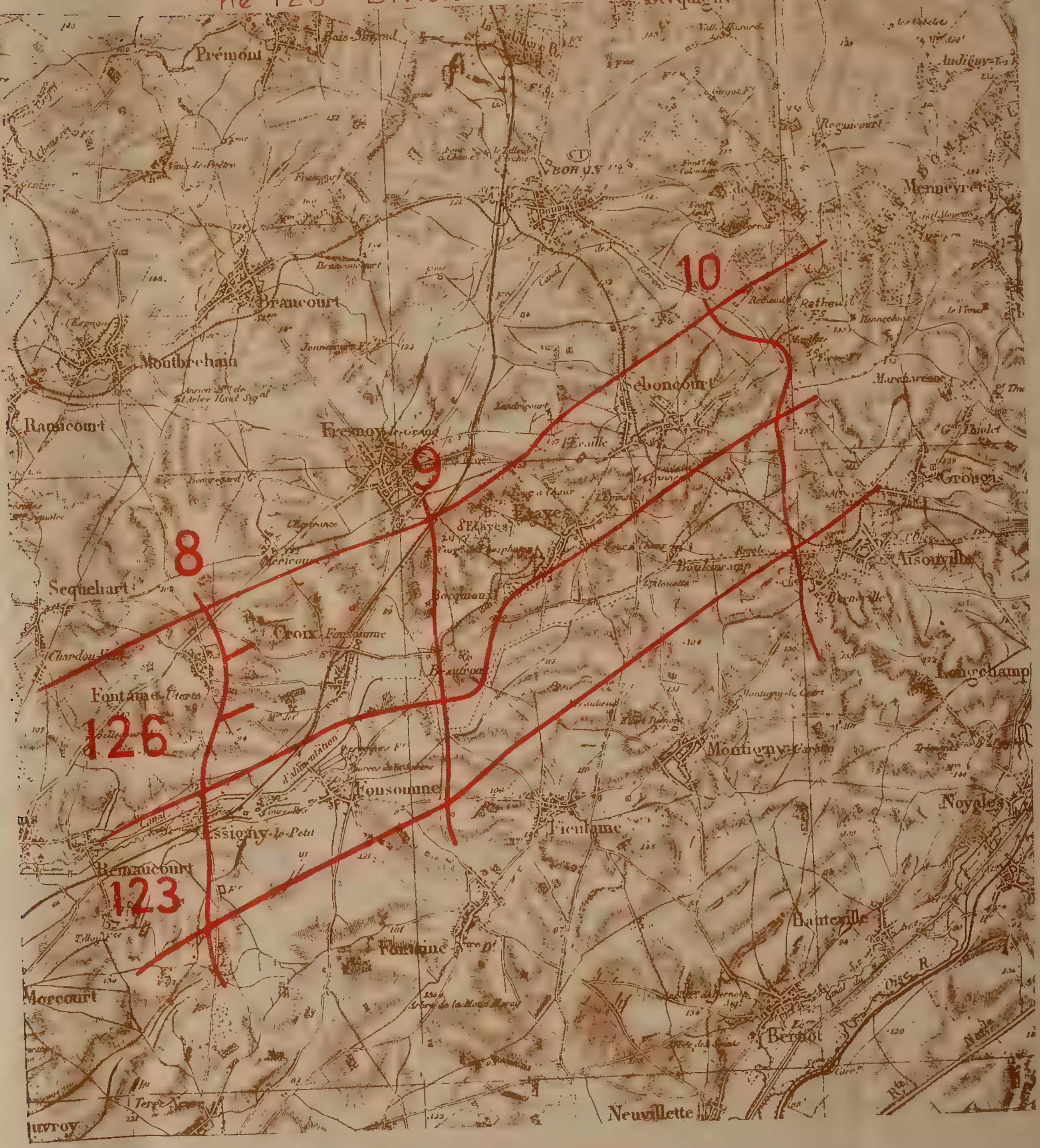
Scale 1:80,000

⊘ Fire of a battalion of 75's
▨ Fire of a battalion of H. Arty.

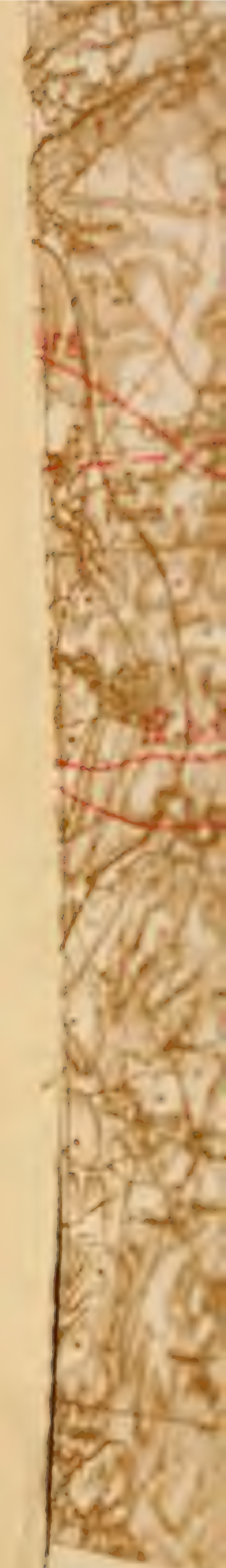

Proisy
Romery
Wiège-Faty
Rue Marin
Rue du Bois
Rue du Rieux
urs.
le Sourd
Colonfay
Puisieux et Clanlieu
12 heures
15 heures
Sains
Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon-

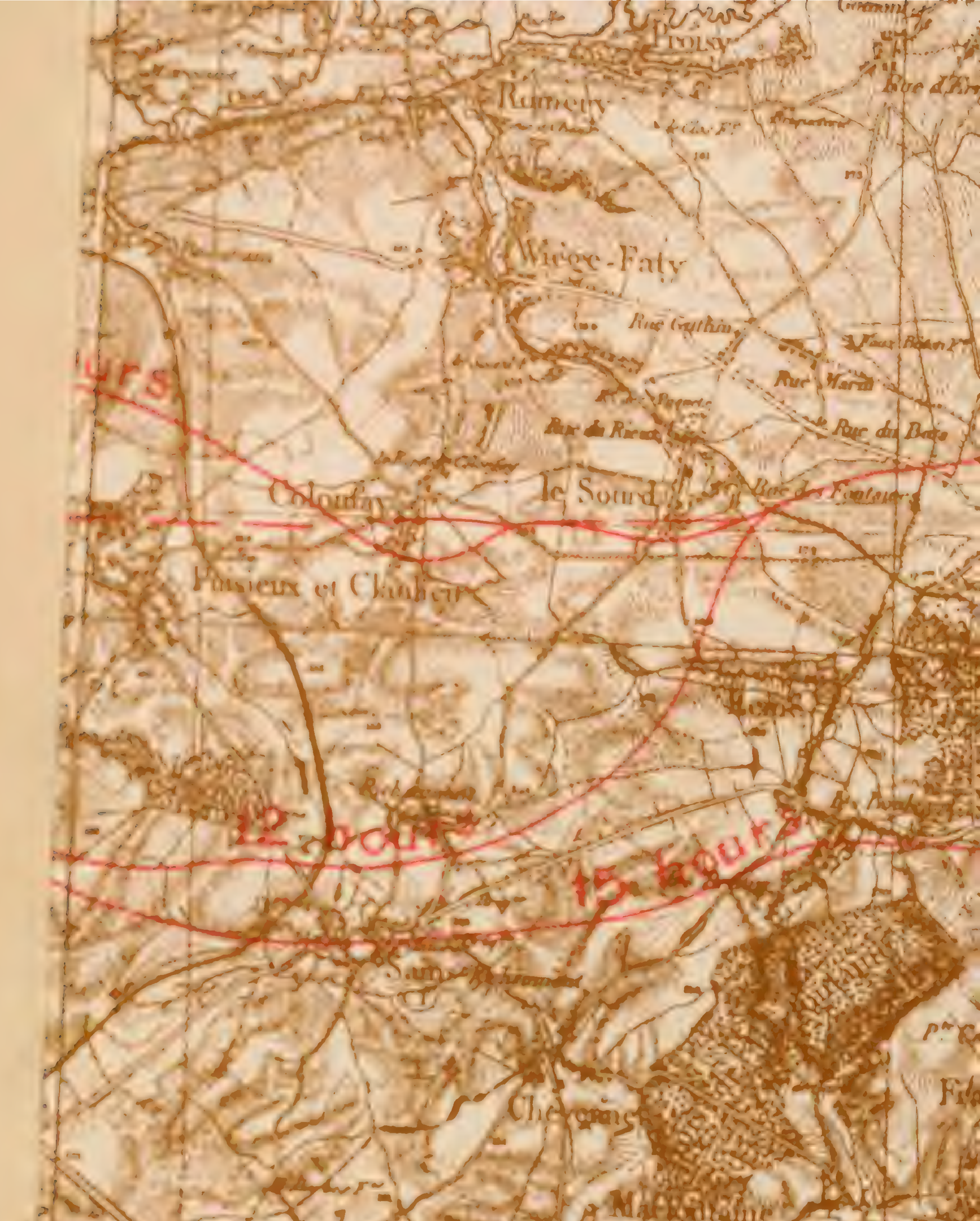
Sketch No 36

The 126th Division October 9th to 11th 1918



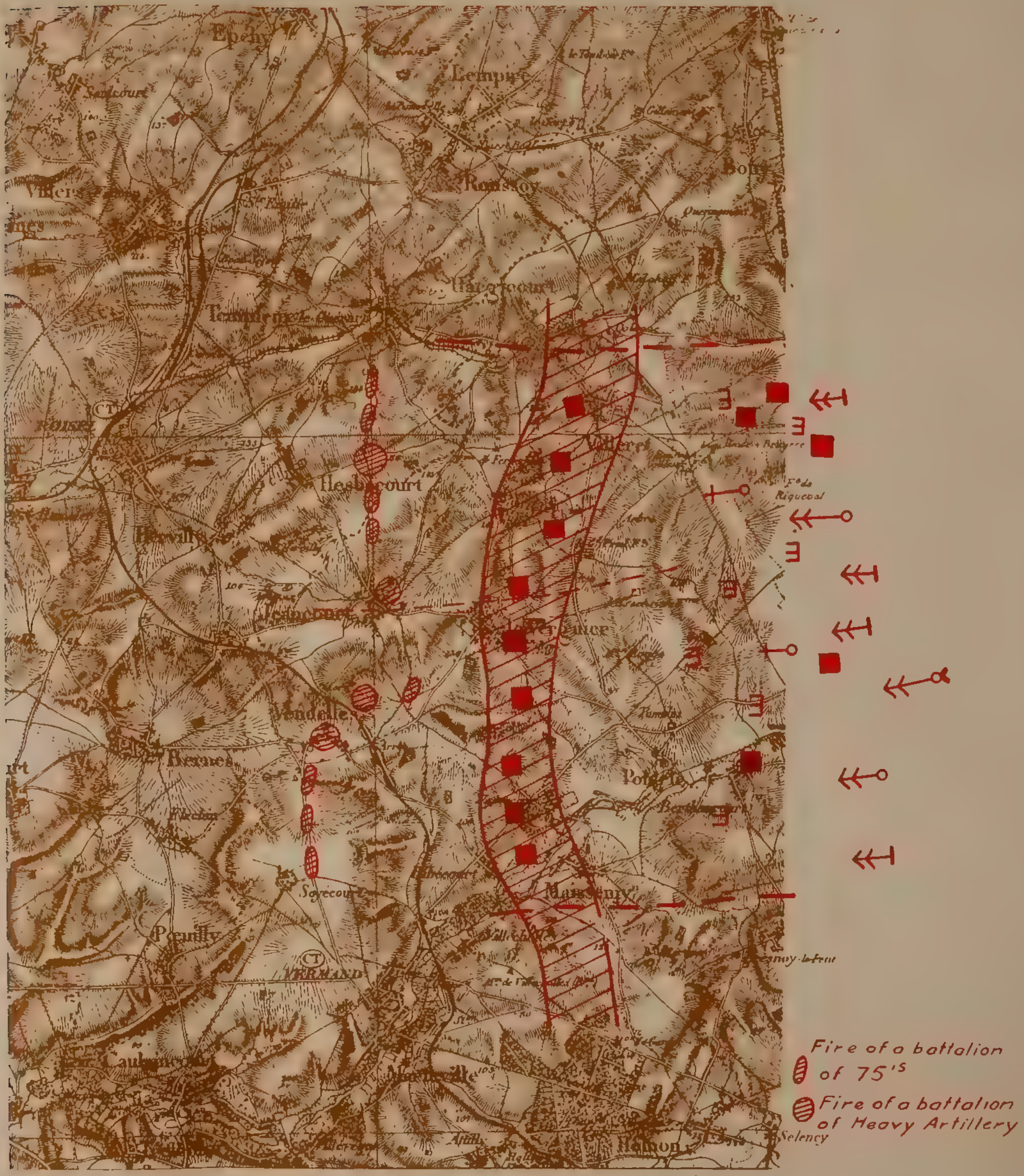
Scale 1:80,000



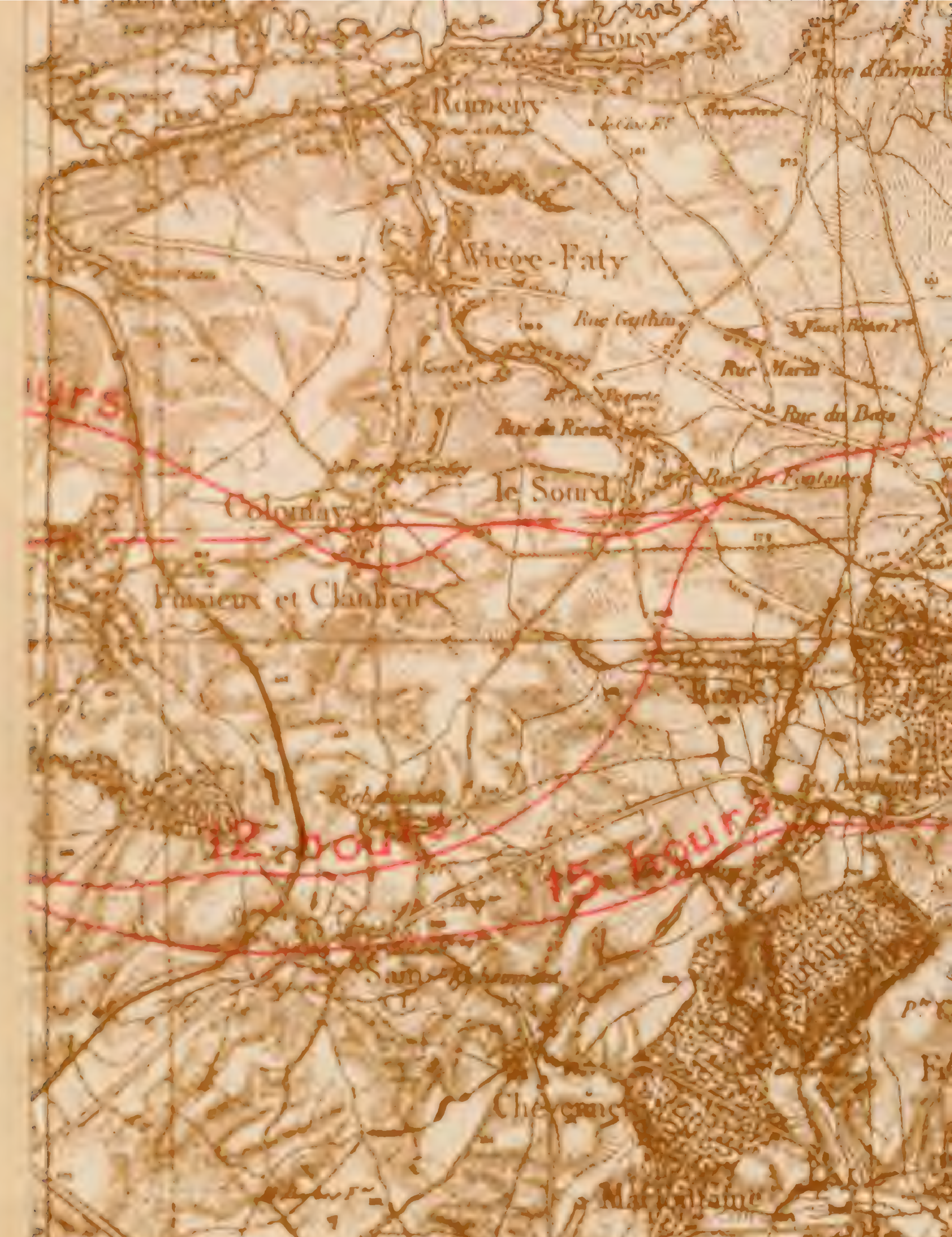

Proisy
Romery
Wiège-Faty
Rue Gathin
Rue Marin
Rue du Bois
Rue du Rieux
Colonfay
le Sourd
Rue des Fontaines
Puisieux et Clanlieu
urs
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
le Chaussoy
Berlancourt
Sons
Chatillon
Thiernu

Sketch No. 37

Covering the withdrawal of the outpost

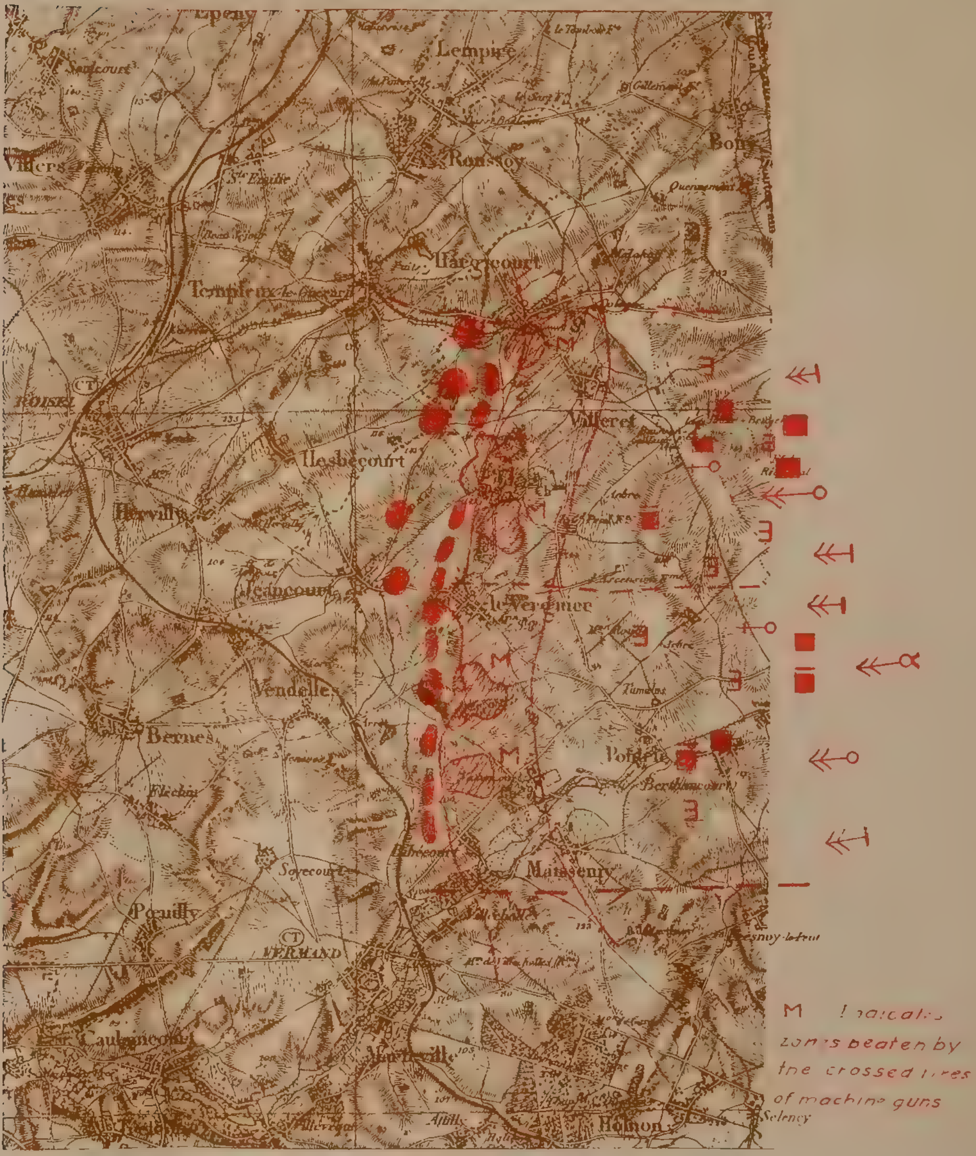


Scale 1:80,000


Proisy
Romery
Wiège-Faty
le Sourd
Colonfay
Puisieux et Clanlieu
12 hours
15 hours
Sains
Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Chatillon-

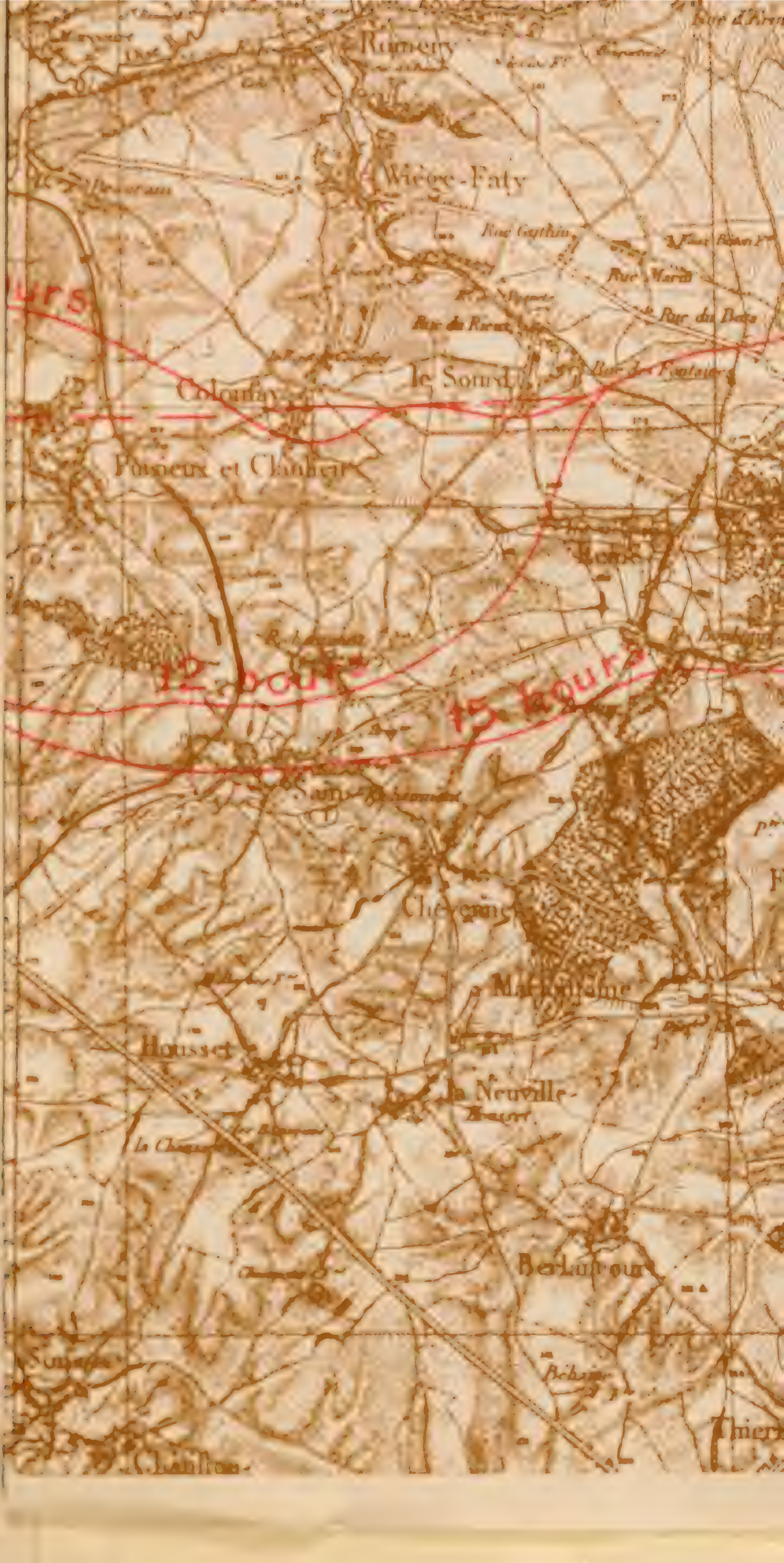
Sketch No. 38

Fire in front of the principal position



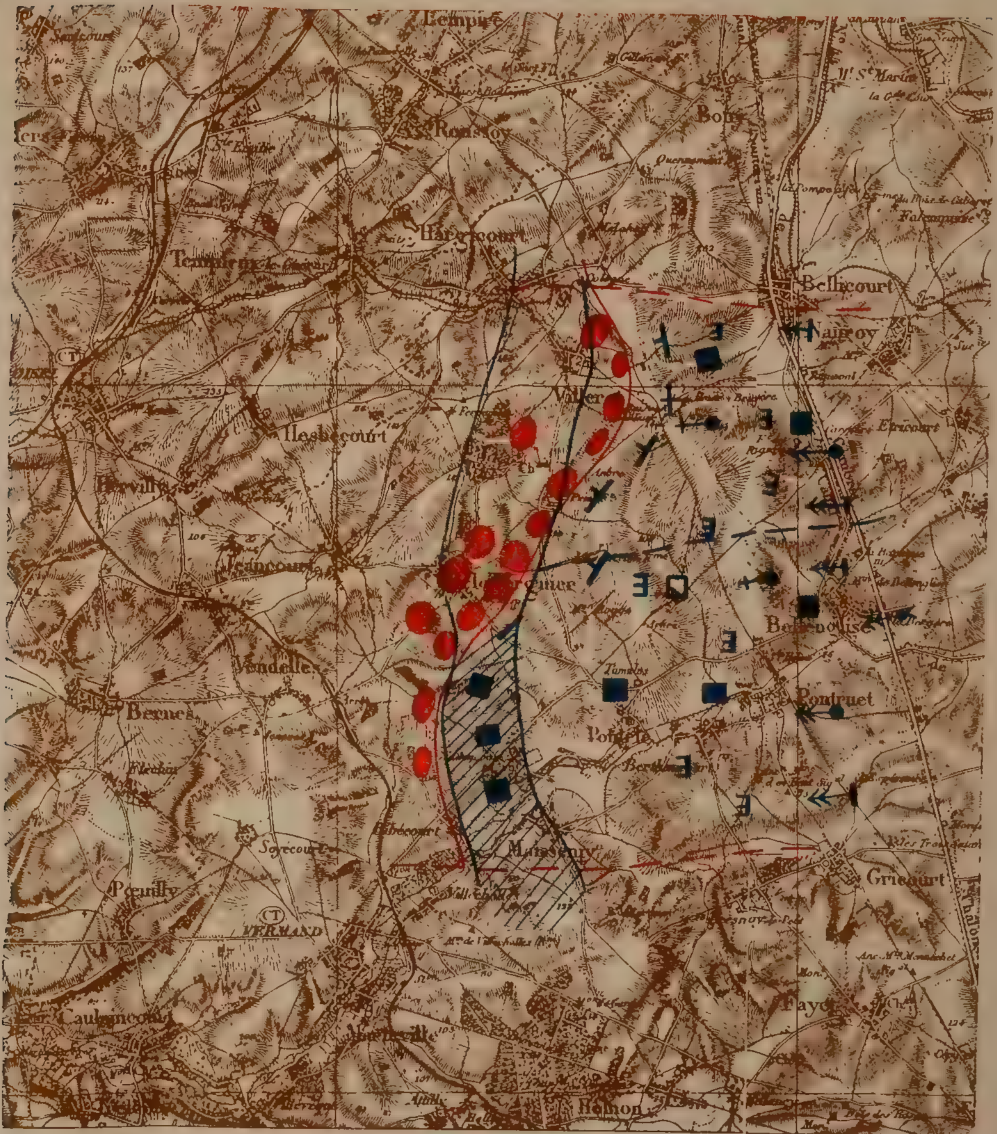
M Indicates zones beaten by the crossed fires of machine guns

Scale 1:80,000


Rumeny
Wiège-Faty
Colonfay
le Sourd
Puisieux et Clanlieu
12 heures
15 heures
Sains-Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt
Thiernu
Chatillon

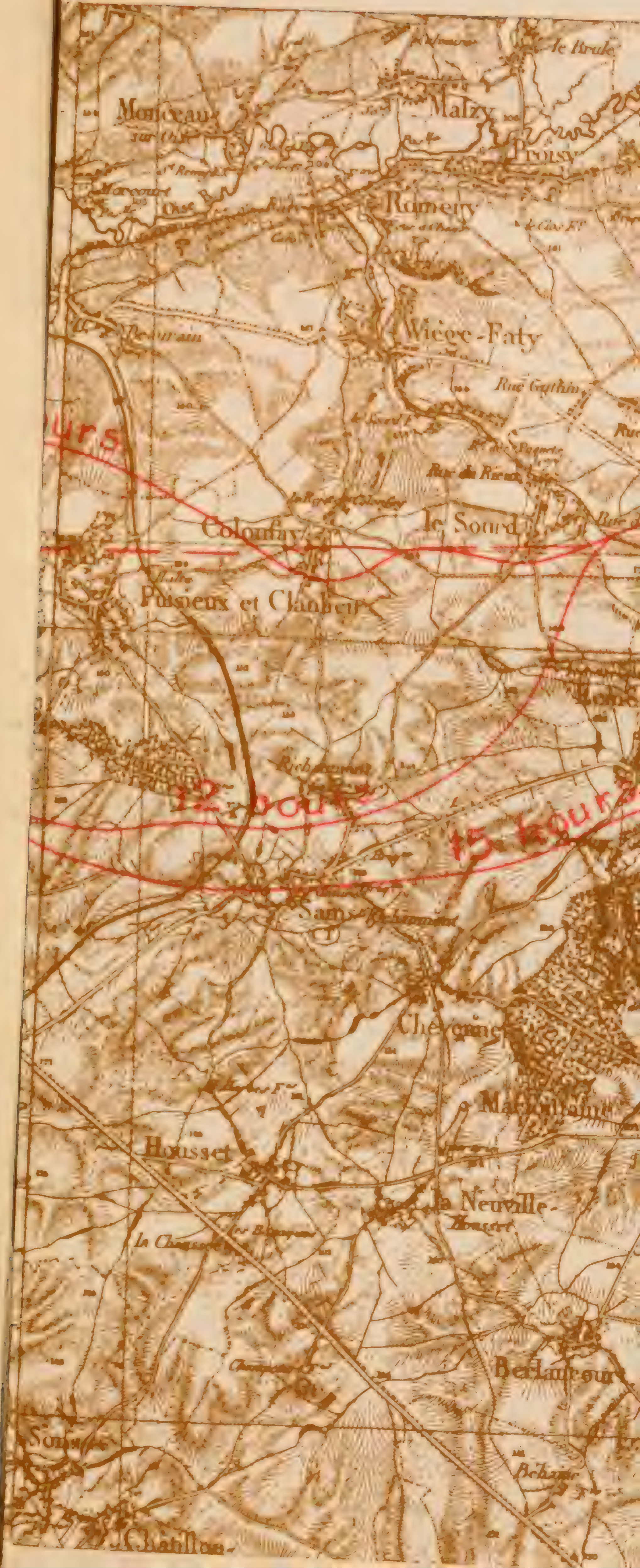
Sketch Nº 39

Limiting a breach in the position of resistance



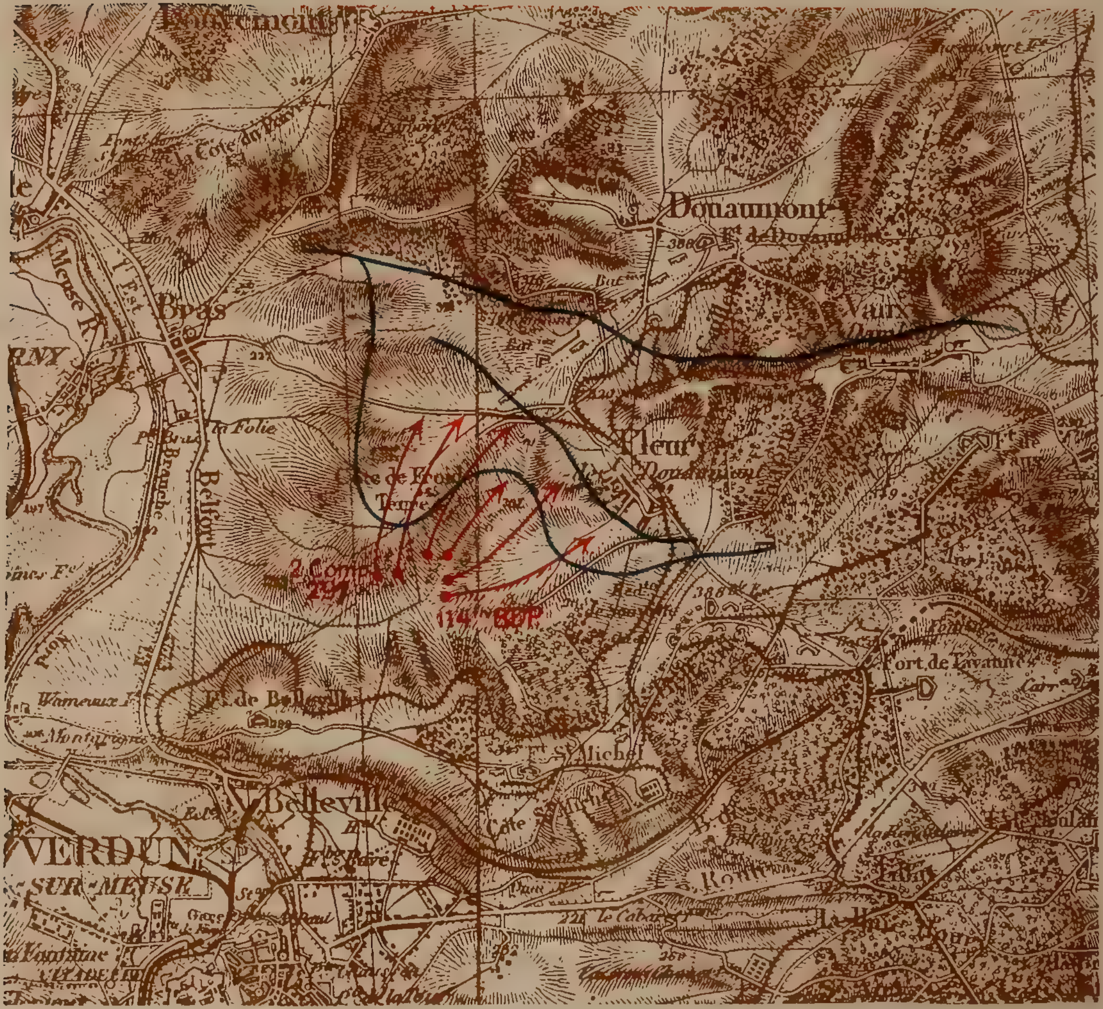
Scale 1:80,000

n of the front

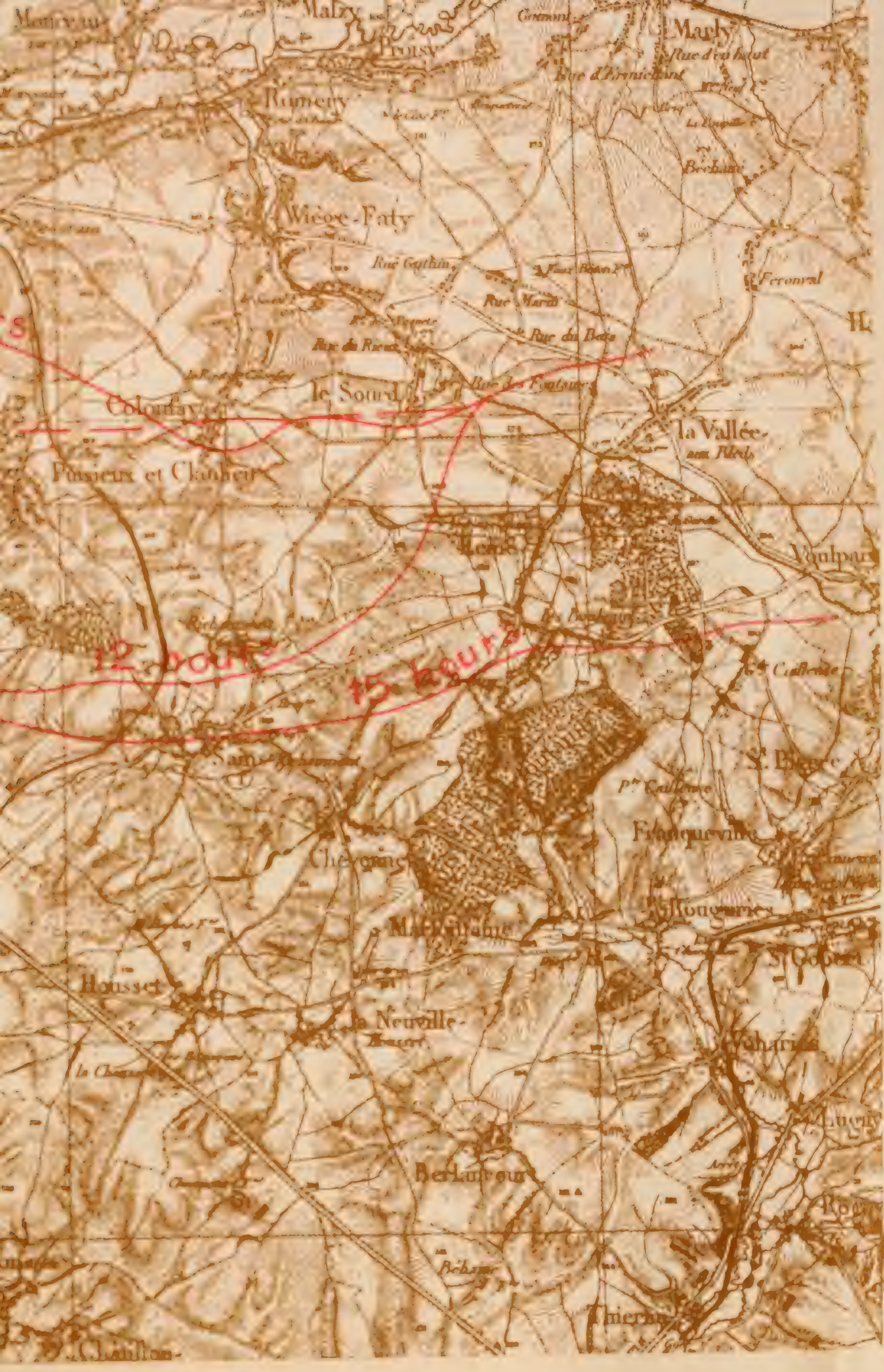


Sketch Nº 40

Counter-attack of the 114th Battalion of Chasseurs on June 23 1916

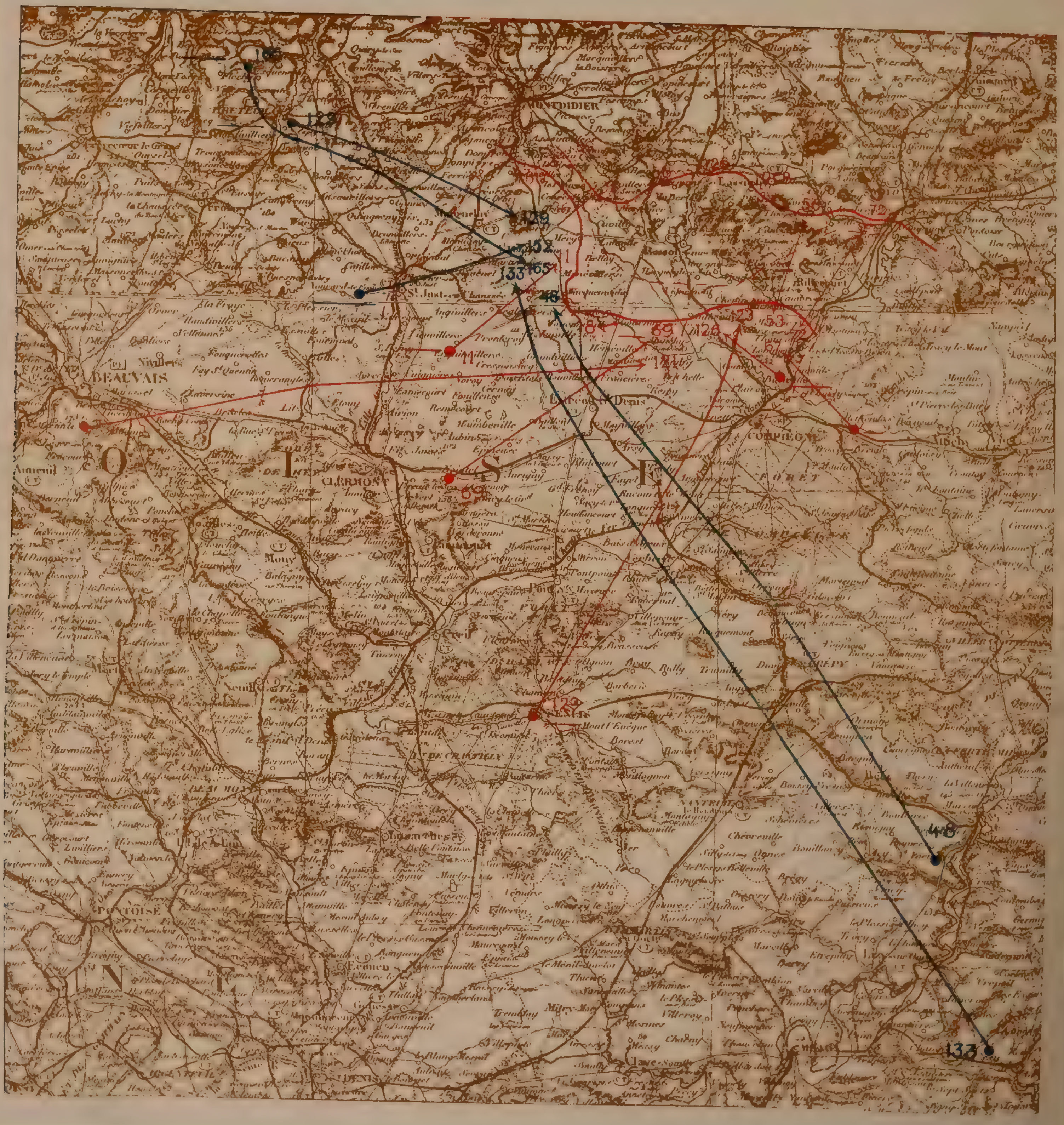


Scale 1:50,000

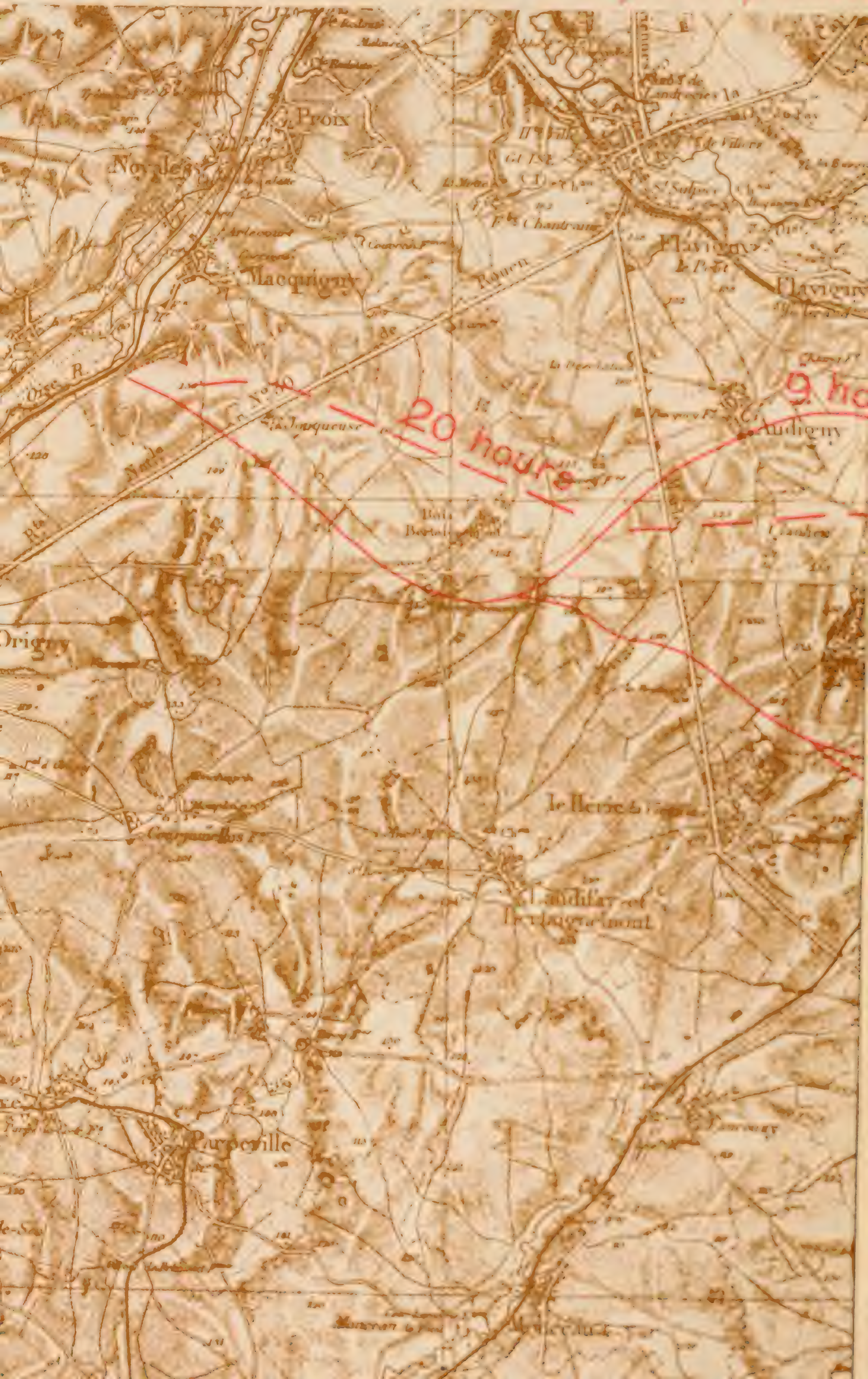

Malzy
Proisy
Marly
Rumeny
Wiège-Faty
Rue Gathin
Rue Marin
Rue du Bois
Feronval
le Sourd
Colonfay
la Vallée-aux Bleds
Puisieux et Clanlieu
Voulpaix
12 heures
15 heures
Sains-Richaumont
Chevennes
Franqueville
Marfontaine
Housset
la Neuville-Housset
St Gobert
Berlancourt
Chatillon

Battle of the Matz

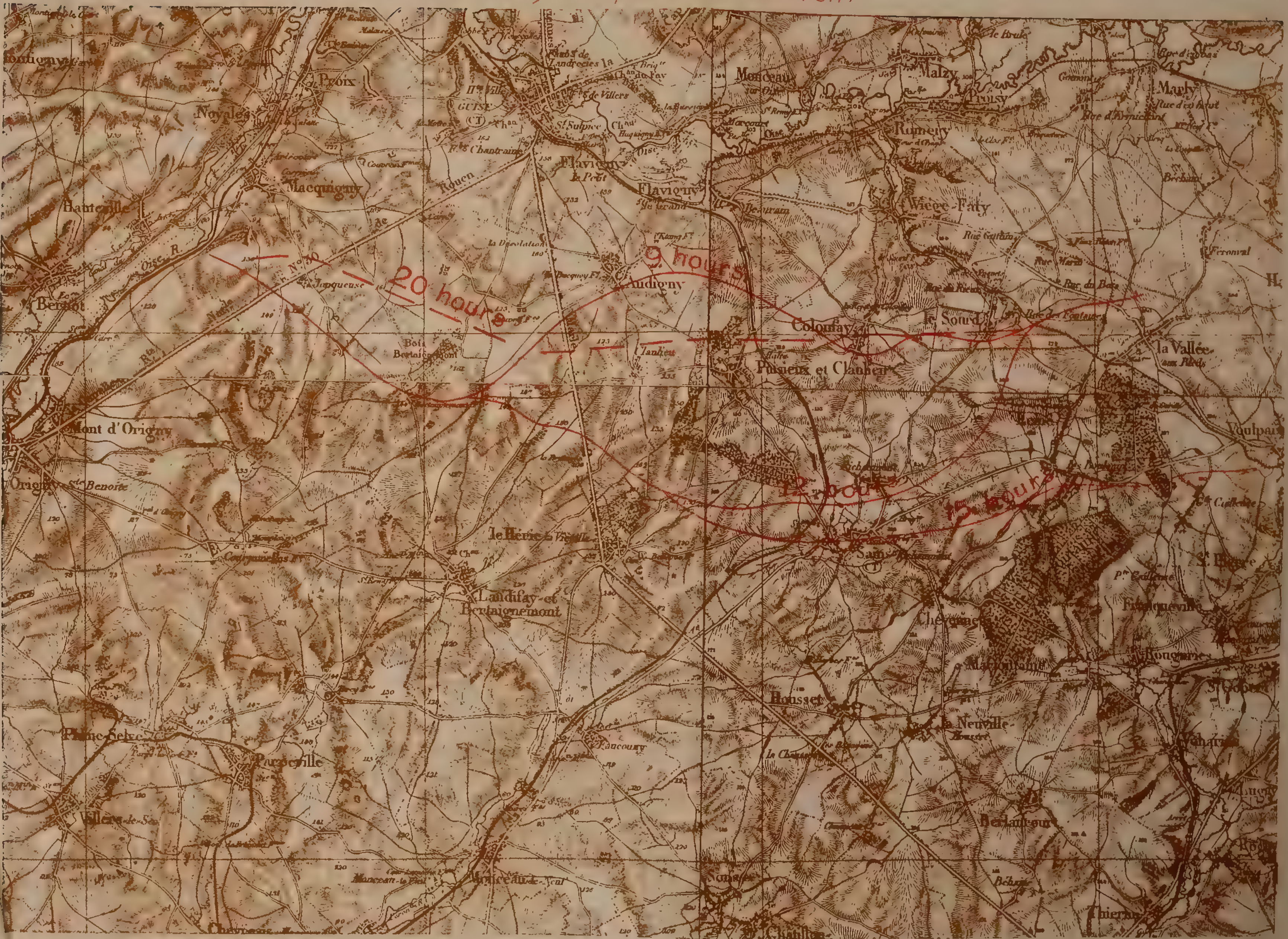
Sketch No 1



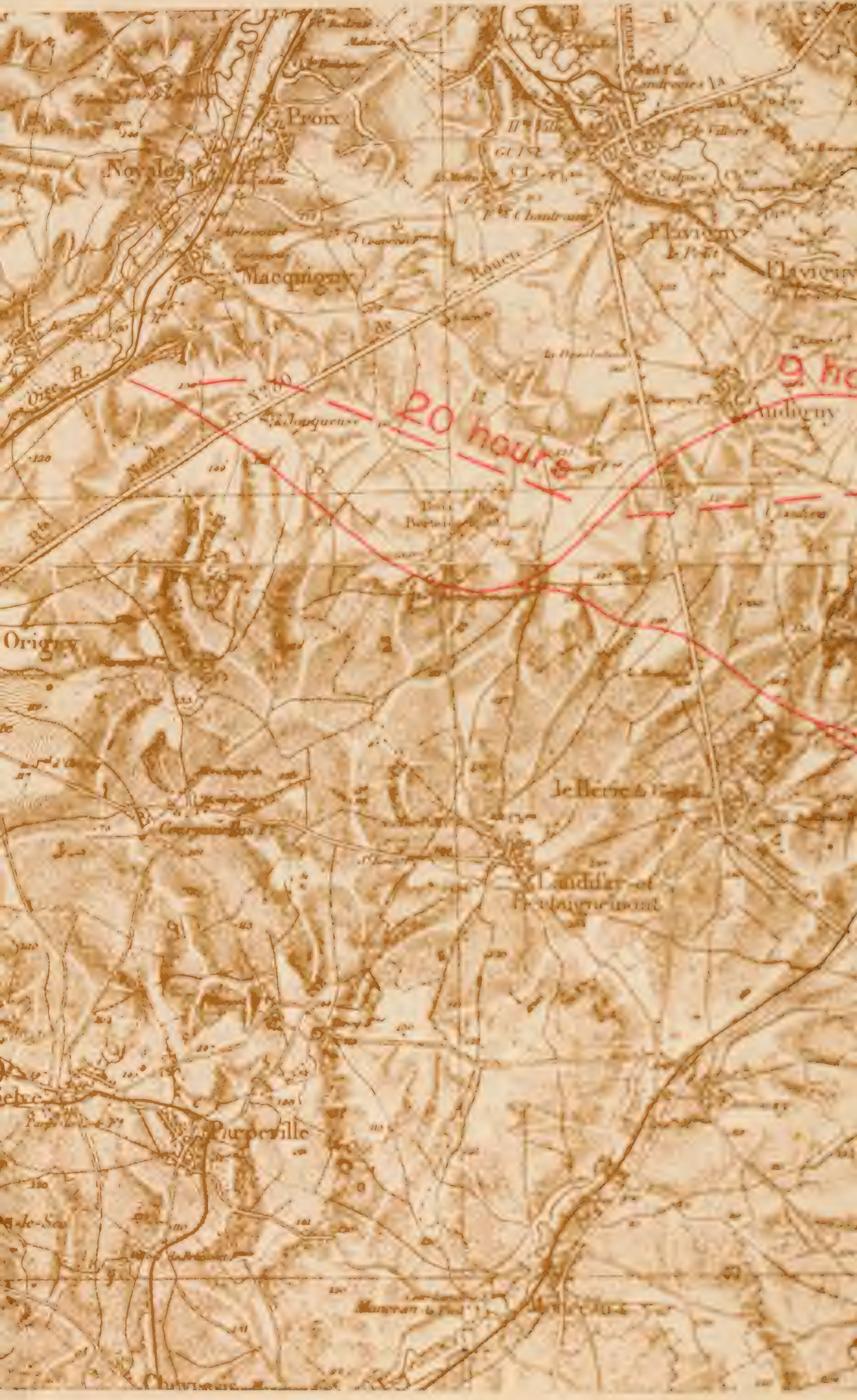
First battle
Changes of positio



First battle of Guise
Changes of position of the front



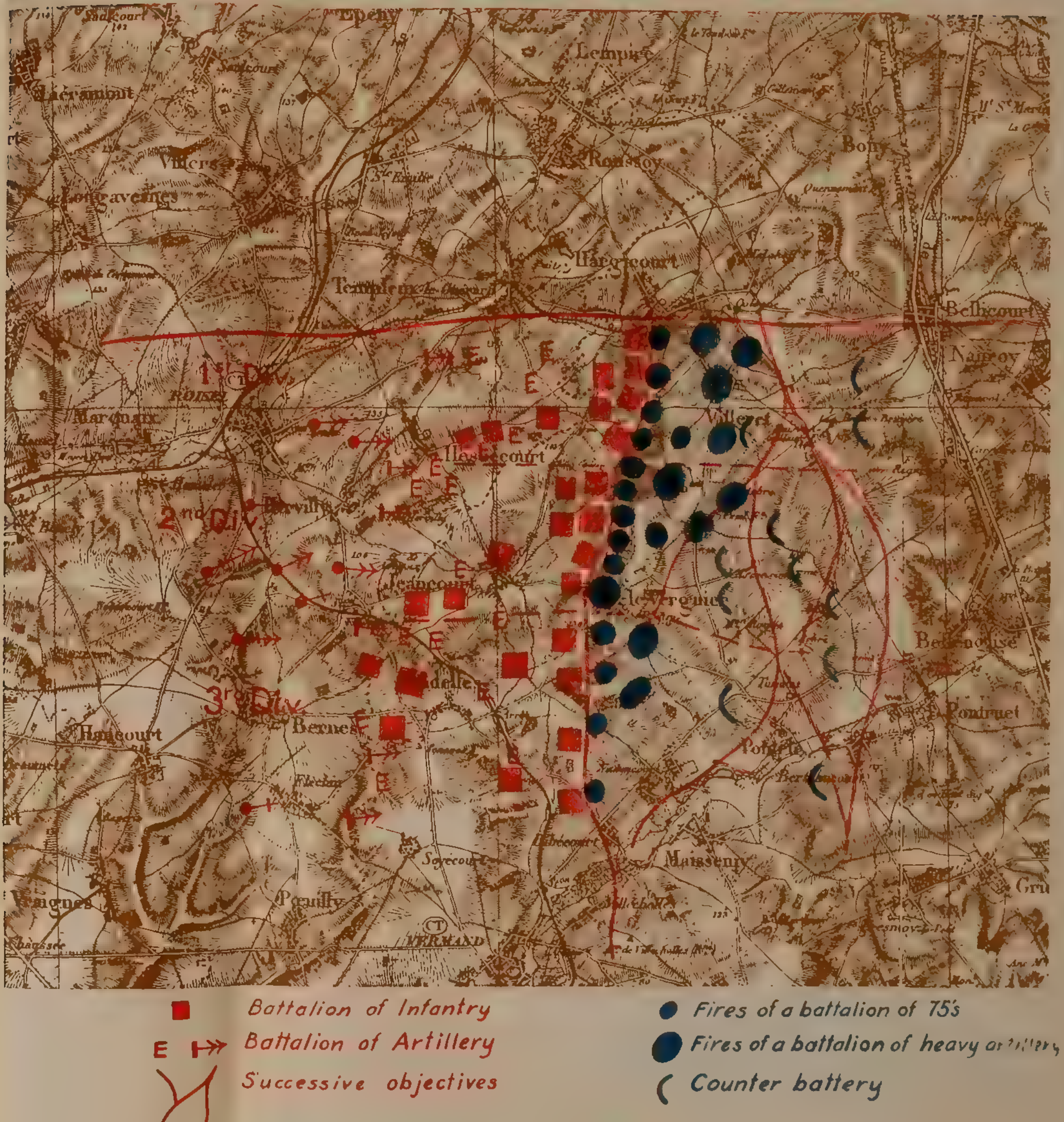
Changes of positio



Sketch No. 43

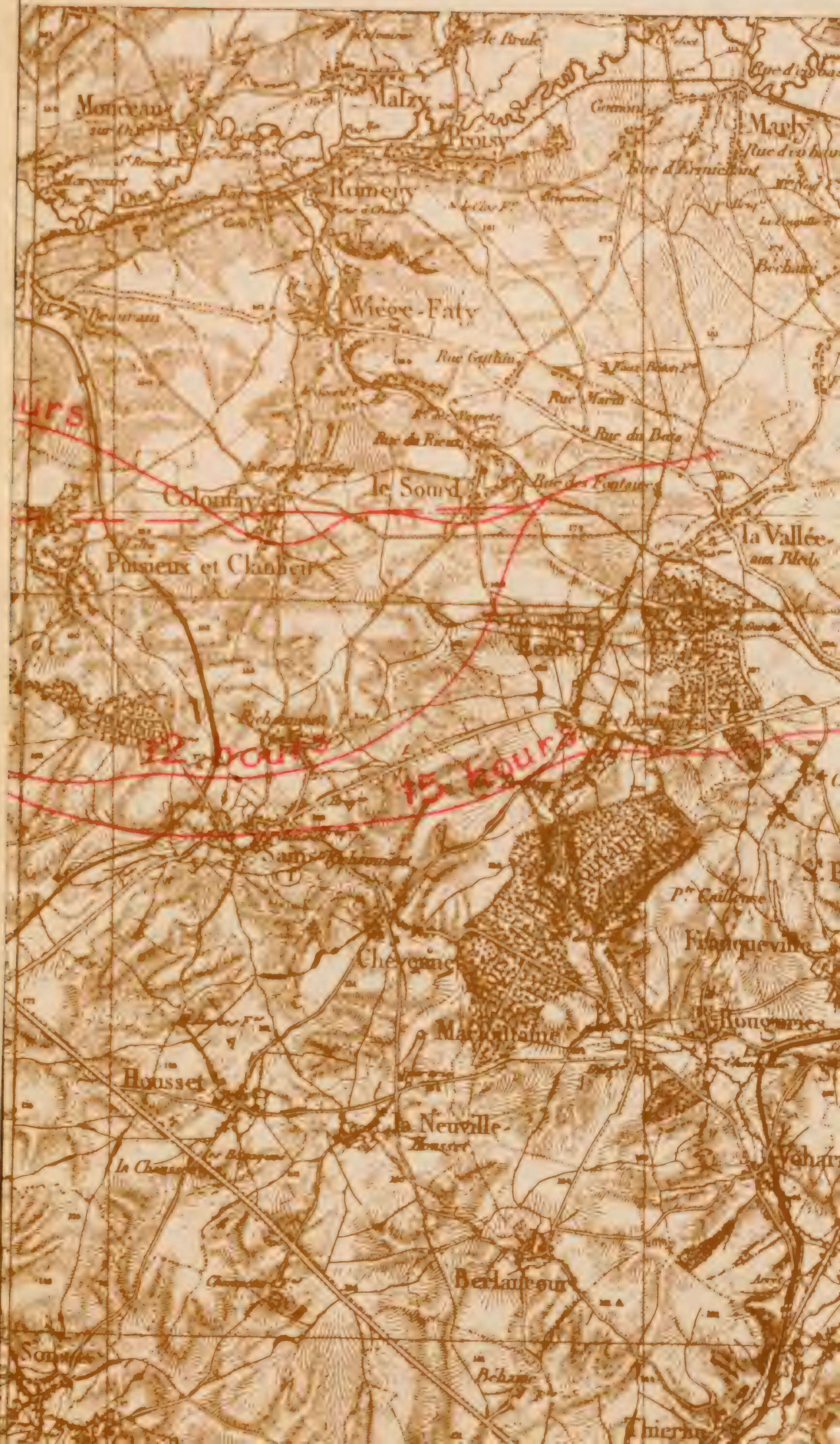
The Attack (first phase)

General disposition and fires of the artillery at the jump-off.



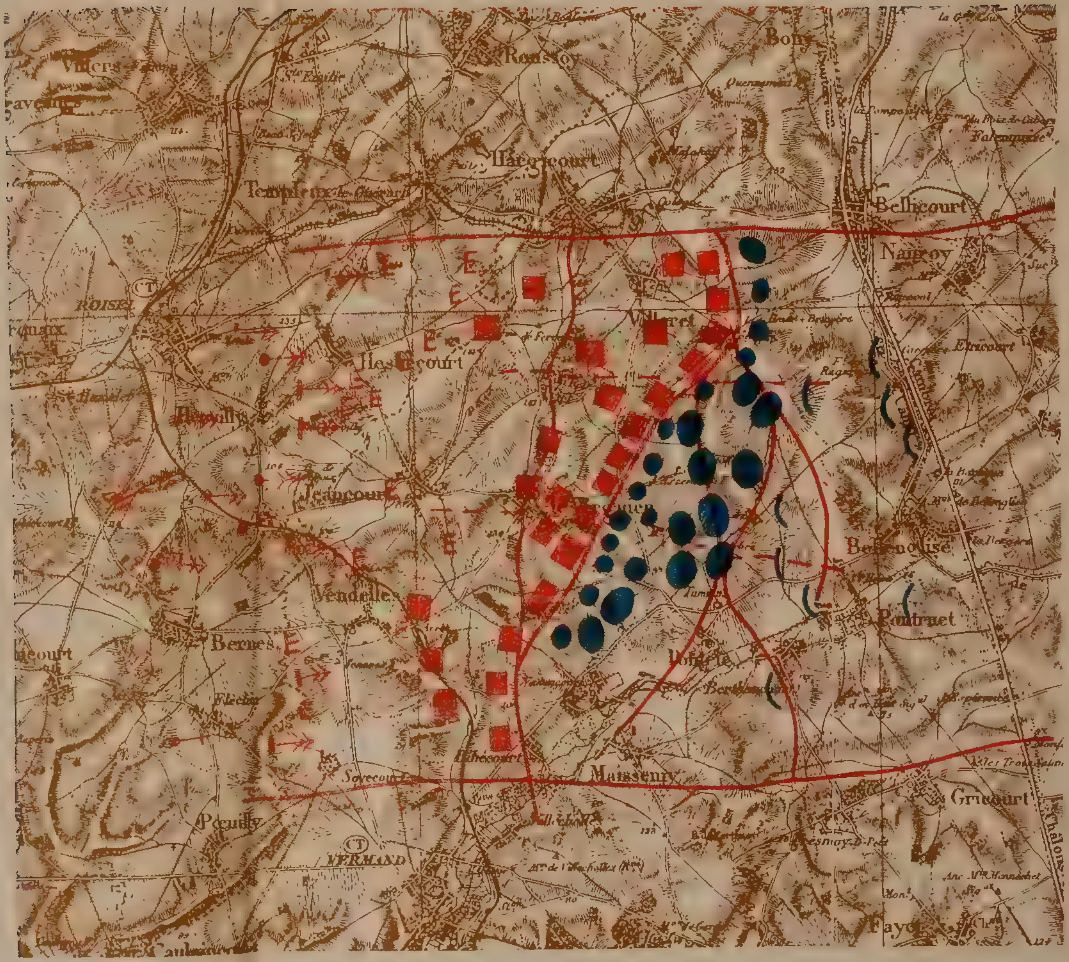
Scale 1:80,000

of Guise
n of the front



Sketch No. 44

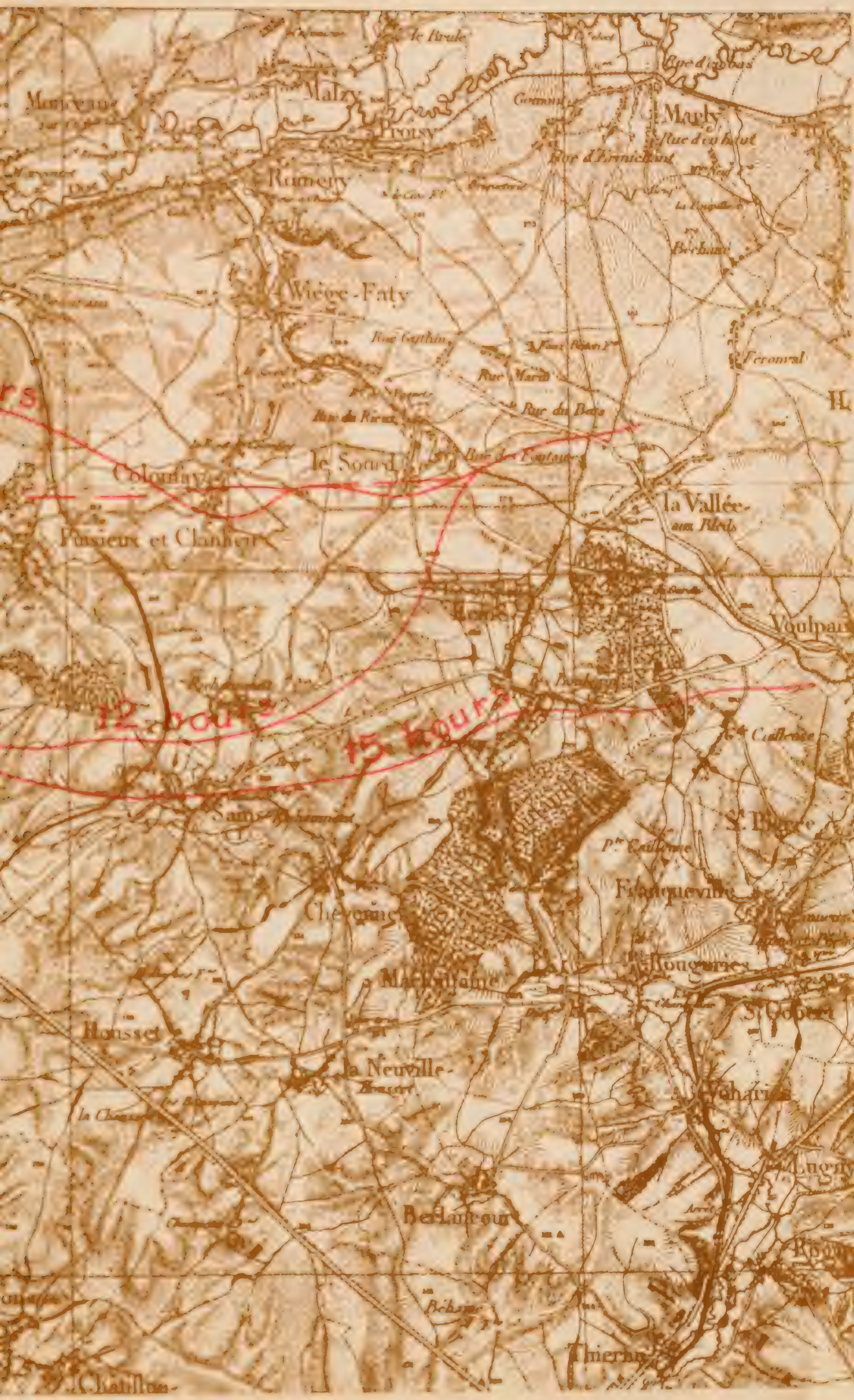
The attack (2nd phase)



Same legend as for Sketch No. 43

Scale 1:80,000

of the front

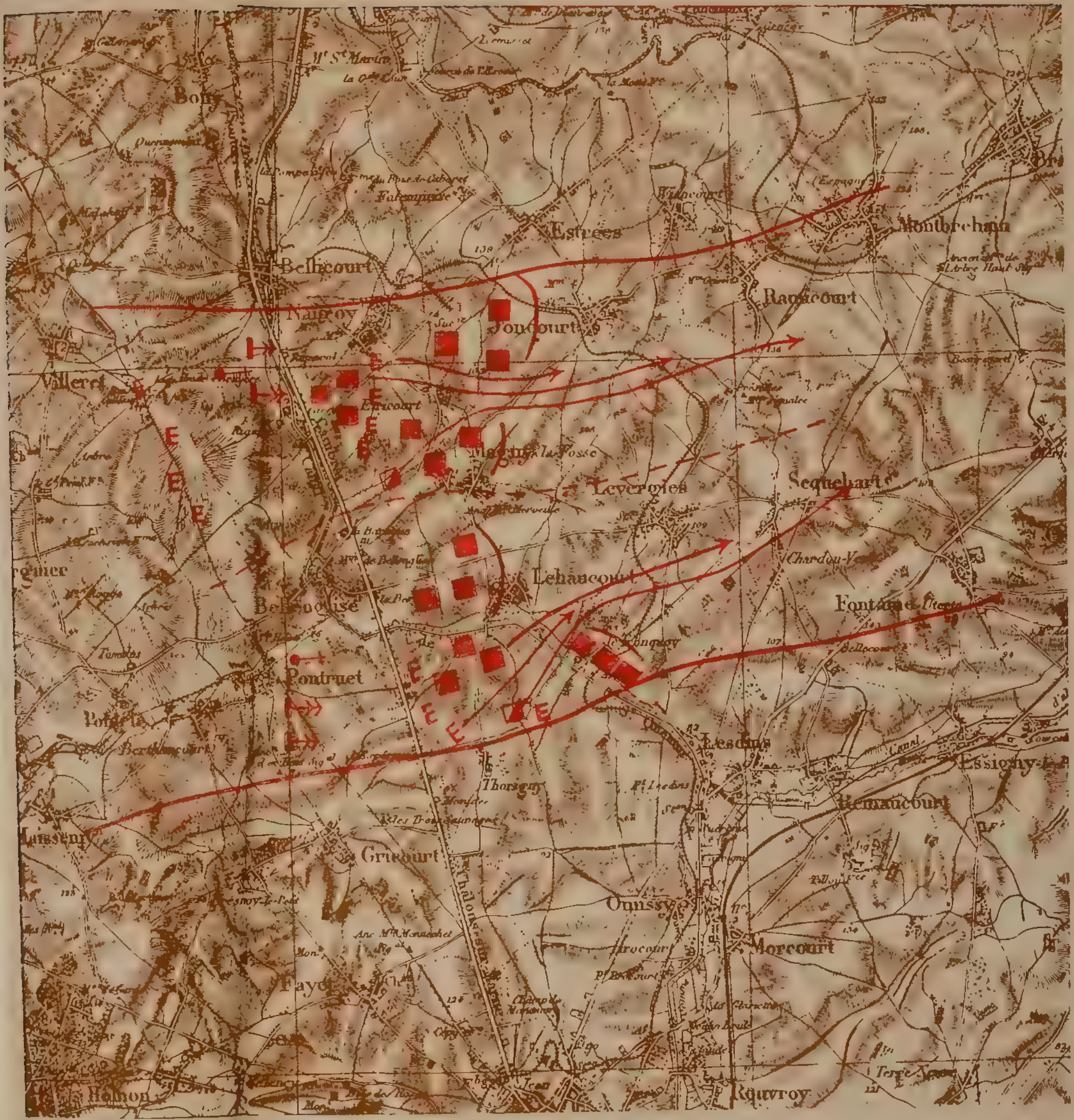


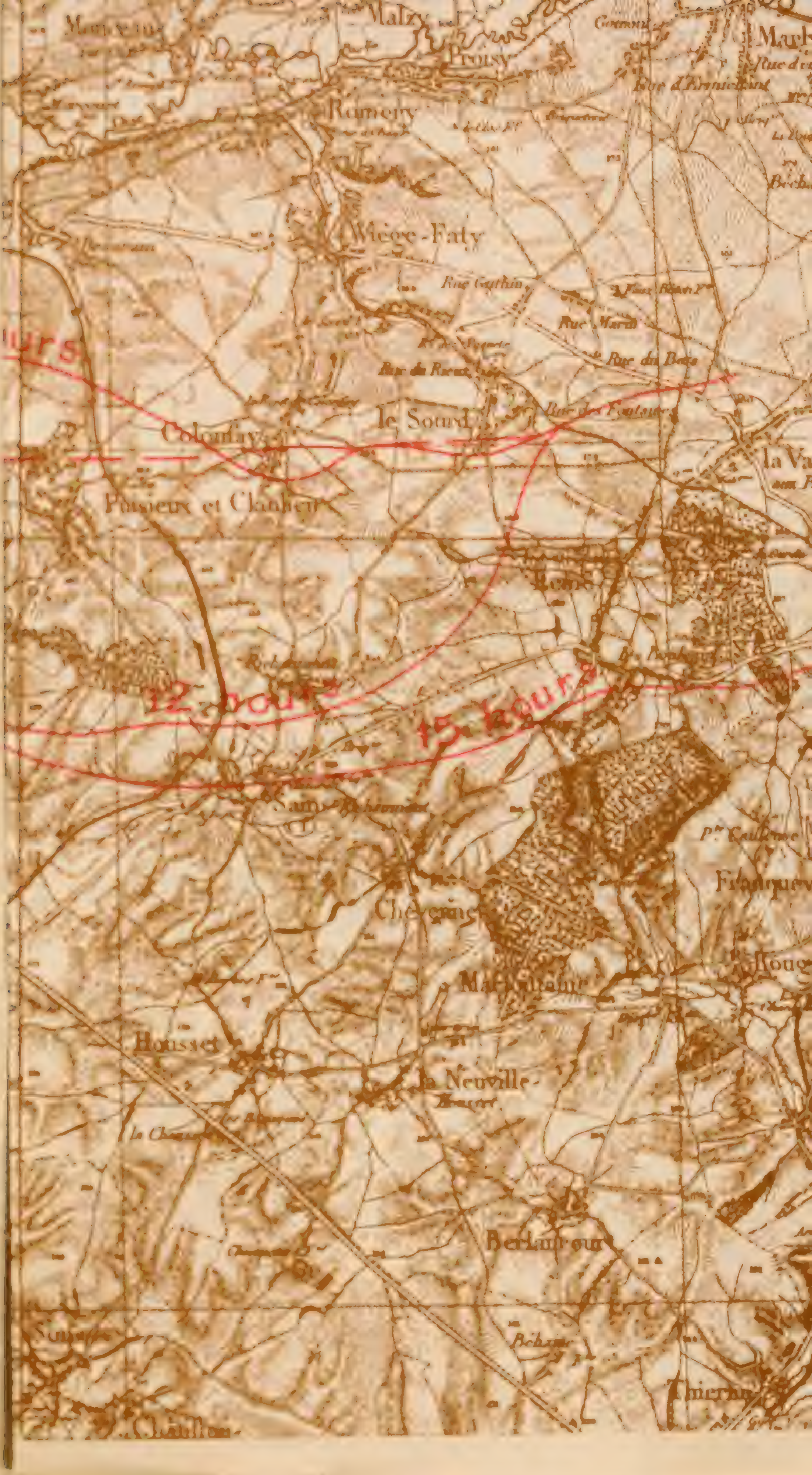
Monceaux
Malzy
Proisy
Marly
Rue d'en haut
Rue d'Ermiclant
Romery
Wiège-Faty
Rue Gythin
Rue Marin
Rue du Bois
Ferconval
le Sourd
Colonfay
Puisieux et Clanlieu
la Vallée-aux Bleds
Voulpaix
rs
12 heures
15 heures
Caffiérie
St Pierre
Sains Richaumont
Chevennes
Franqueville
Rougeries
Marfontaine
St Gobert
Housset
la Neuville-Housset
Bertaucourt
Lugny
Thiernu
Châtillon

Sketch No. 45

Exploitation and pursuit

1:80,000

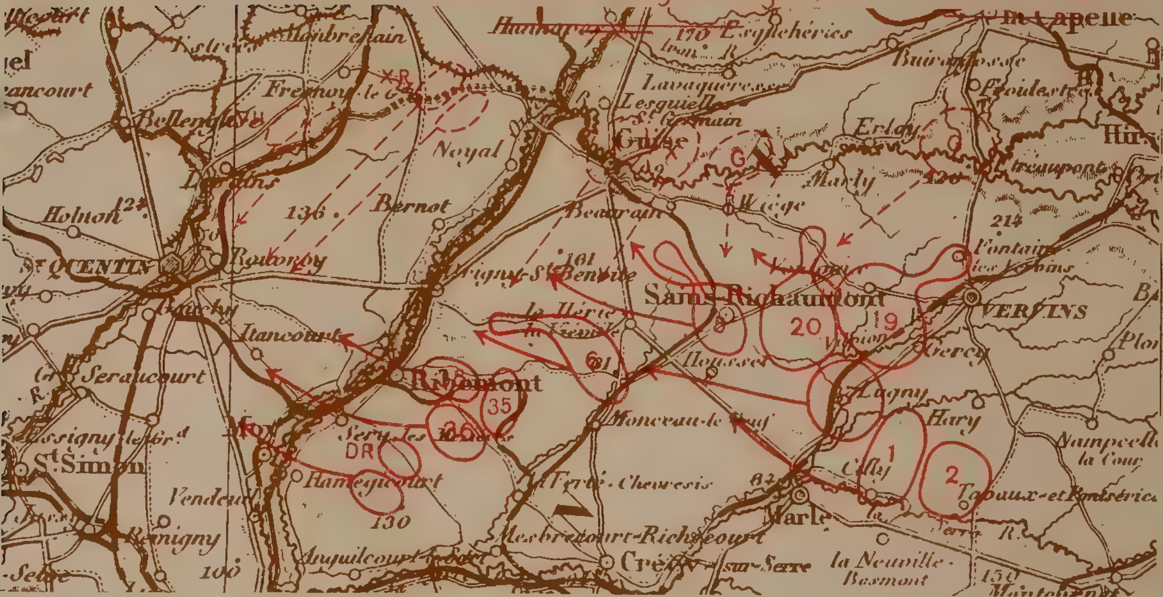



Malzy
Proisy
Romery
Wiège-Faty
Rue Gythin
Rue Marin
Rue du Bois
le Sourd
Colonfay
Puisieux et Clanlieu
12 heures
15 heures
Sains Richaumont
Chevennes
Marfontaine
Housset
la Neuville-Housset
Berlancourt

First battle of Guise (1914)

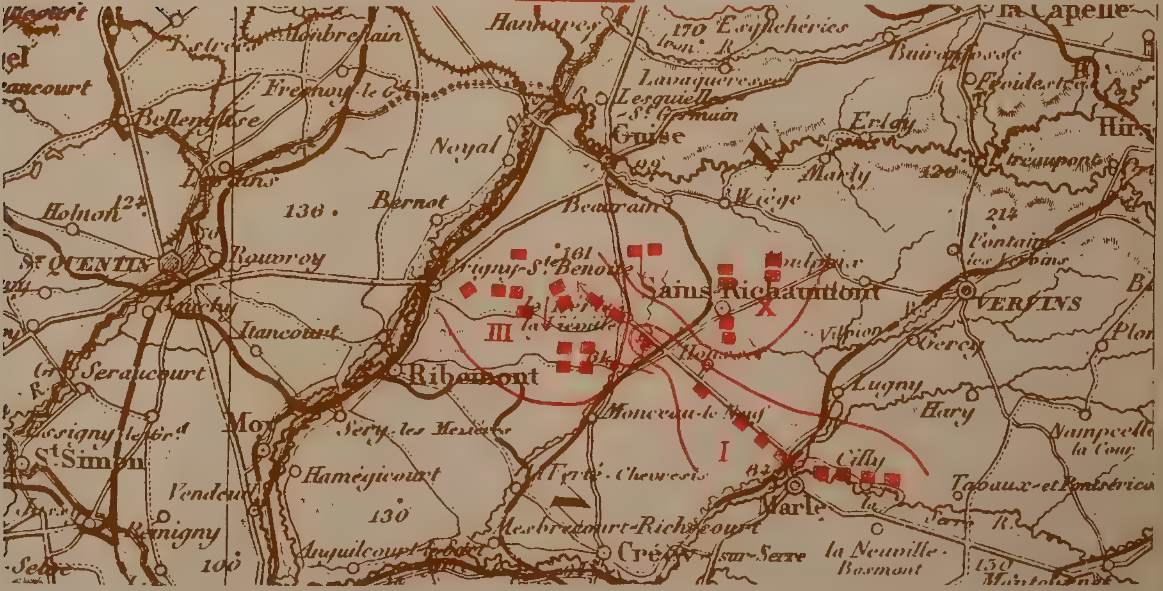
Situation the evening of August, 28

Sketch Nº 46



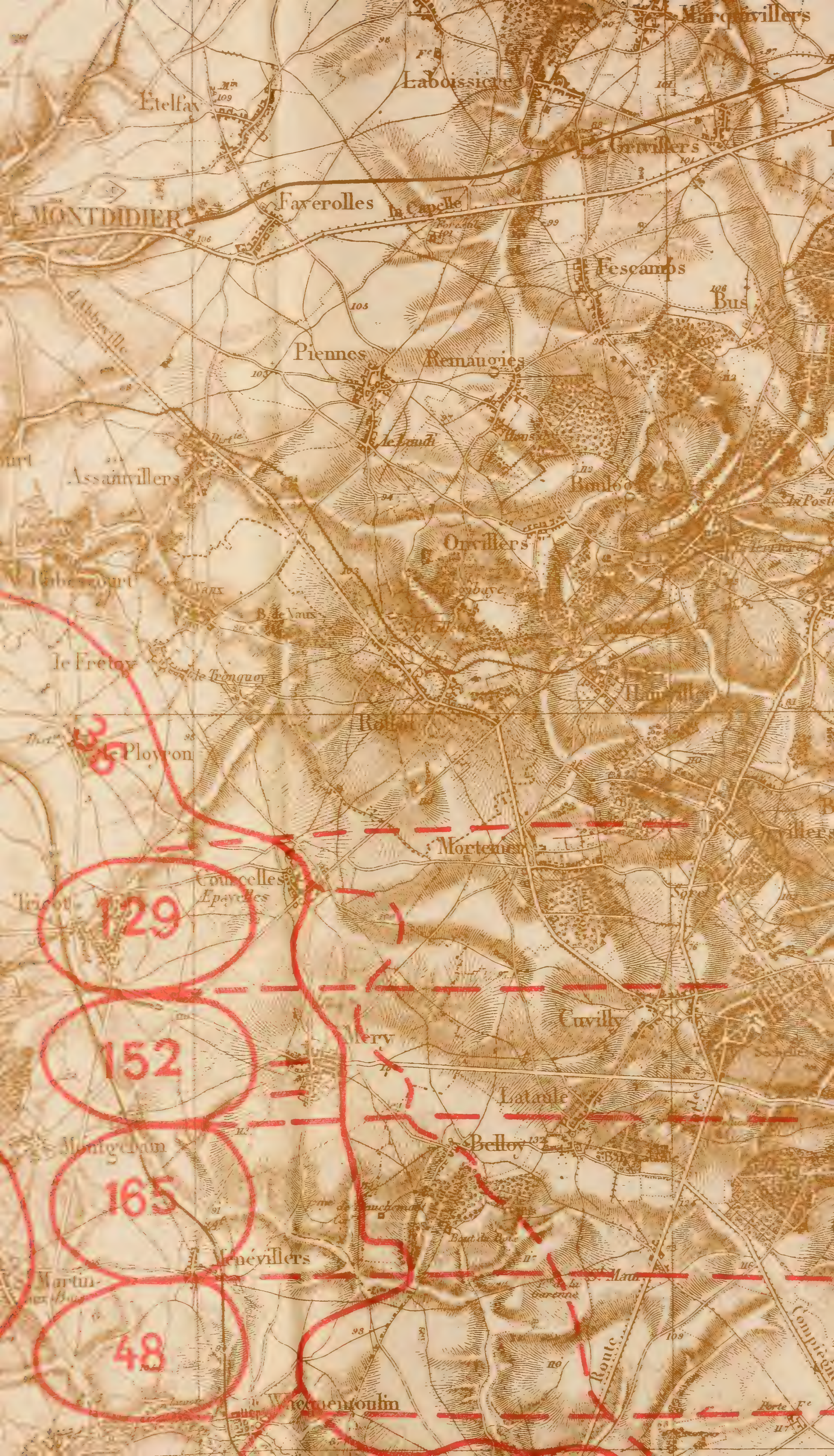
August 29th - Situation about 9.00 A.M.

Sketch Nº47



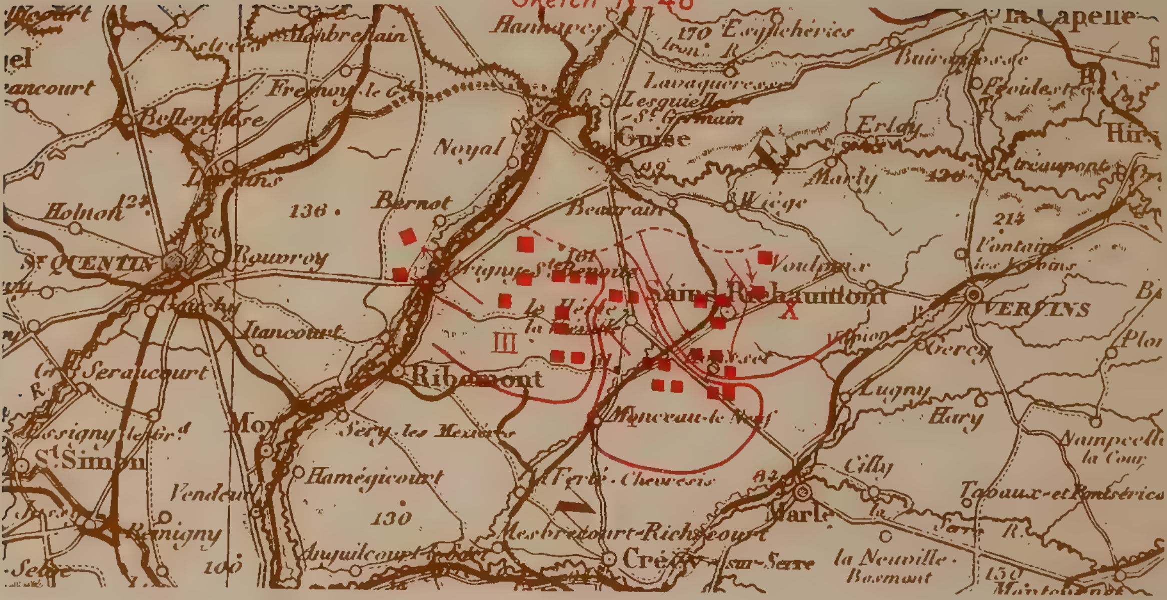
1:320,000

villers
3
4
Vontiers


Marquivillers
Laboissière
Etelfay
Grivillers
MONTDIDIER
Faverolles
la Capelle
Fescamps
Bus
Piennes
Remaugies
Assainvillers
Orvillers
Vaux
B. de Vaux
le Frétoy
le Tronquoy
Rollot
36
le Ployron
Mortemer
Courcelles
Épayelles
Tricot
129
152
Méry
Cuvilly
Lataule
Belloy
Montgérain
165
Ménévillers
St Martin aux Bois
48
Wacquemoulin
Route
Compiègne
d'Abbeville

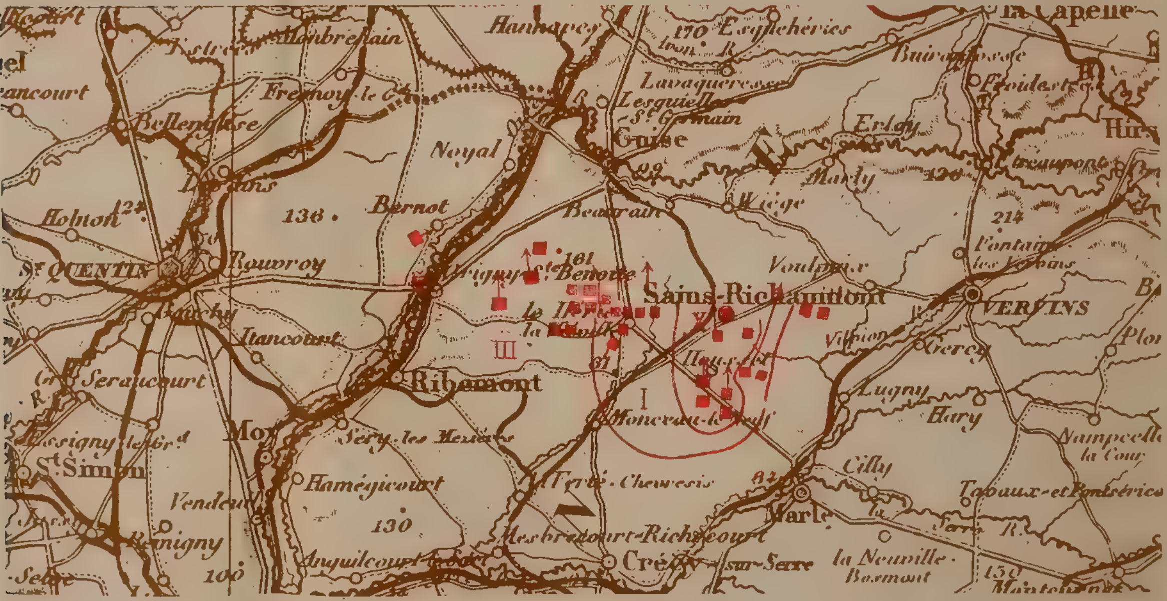
August 29th - Situation about noon

Sketch No. 48



August 29th - Situation about 3:00 P.M.

Sketch No. 49



MONT
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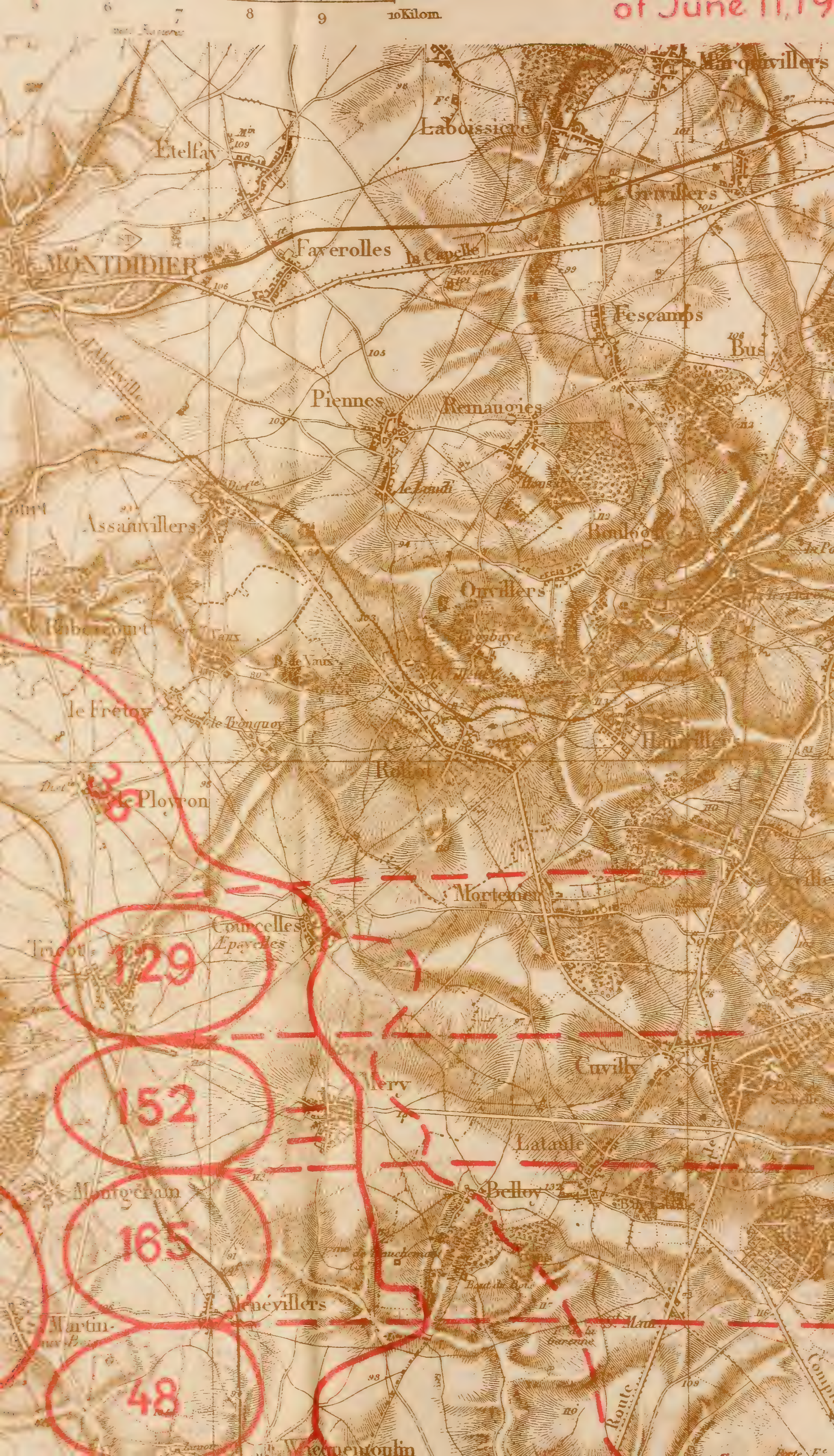
98
3



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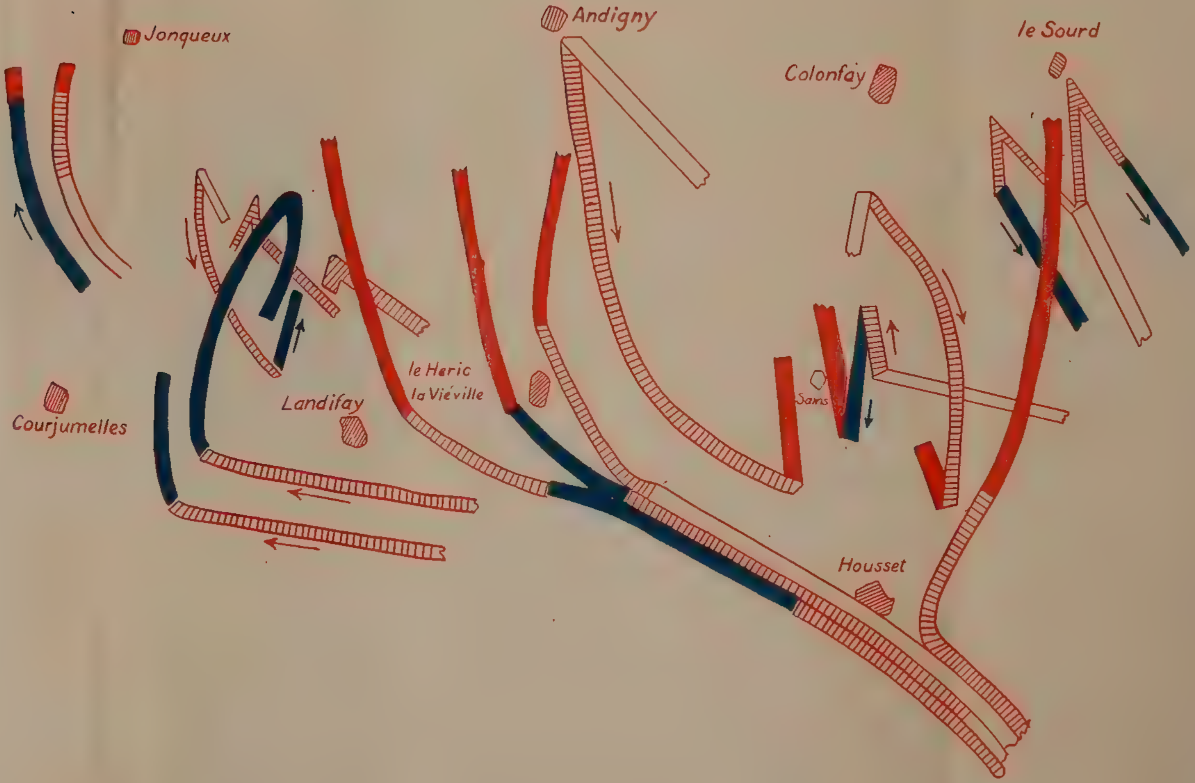
of June 11,19
Marquivillers
Laboissière
Etelfay
Grivillers
MONTDIDIER
Faverolles
la Capelle
Fescamps
Bus
Piennes
Remaugies
le Laudi
Assainvillers
Boulogne
Onvillers
Vaux
B. de Vaux
le Frétoy
le Tronquoy
Rollot
Hainvillers
le Ployron
Mortemer
Courcelles
Épayelles
Tricot
129
152
Méry
Cuvilly
Lataule
Belloy
Montgérain
165
Ménévillers
St. Martin-aux-Bois
48
Wacquemoulin
Route

Sketch Nº 50

Battle of Guise

Graphic showing the movements of the French right



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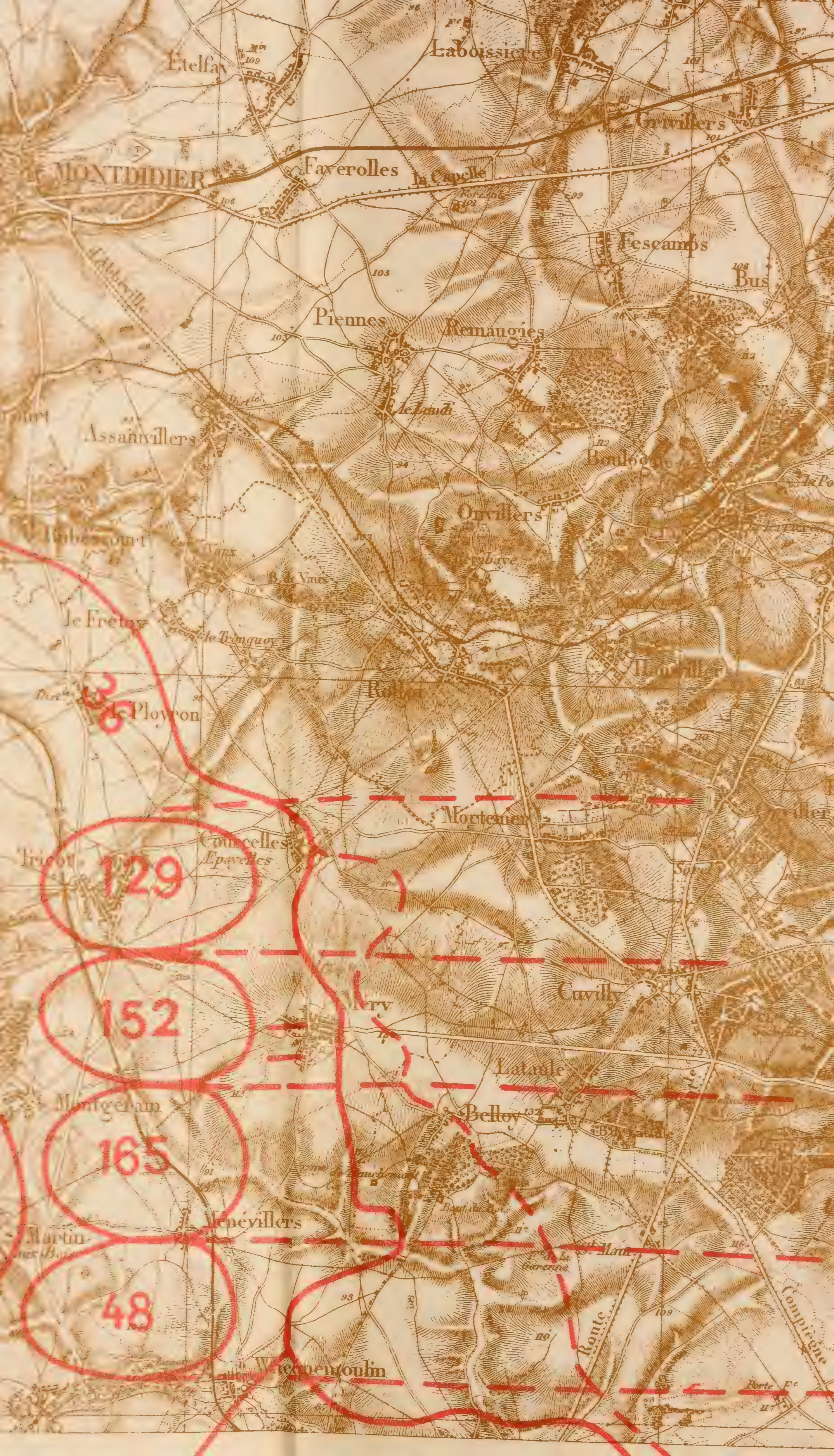
Etelfay
Laboissière
Orvillers
MONTDIDIER
Faverolles
la Capelle
Fescamps
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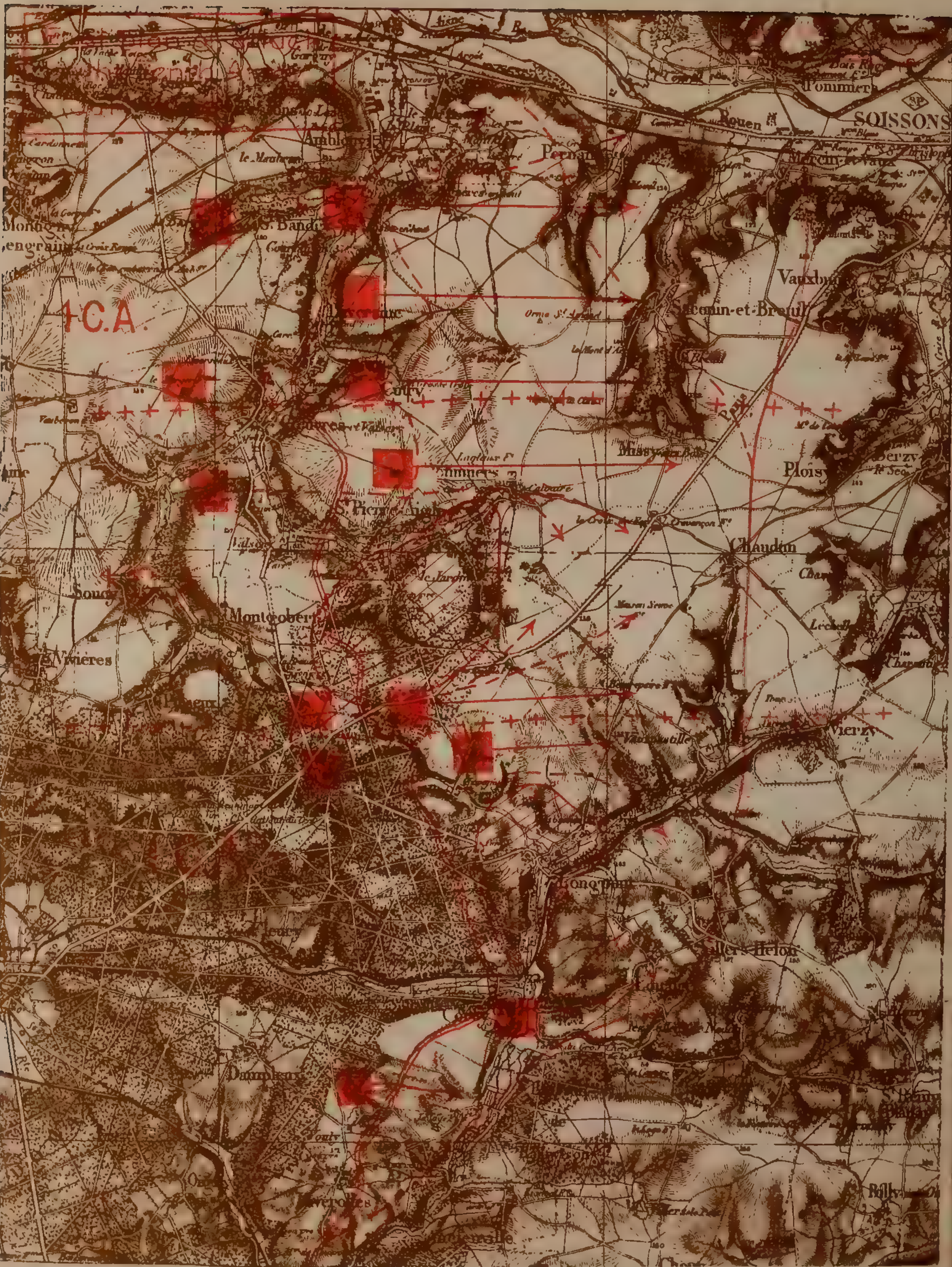
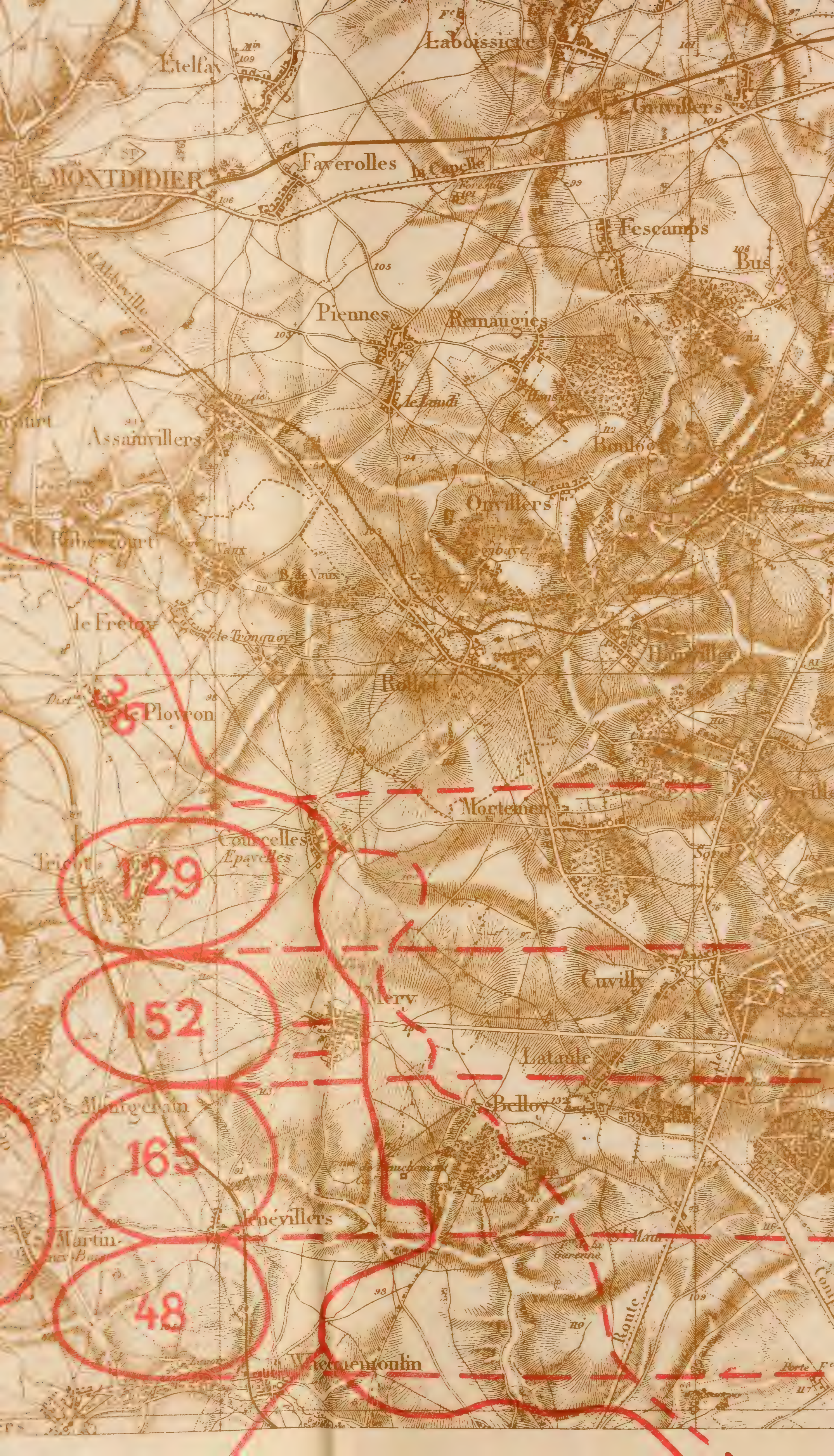
Assainvillers
Boulogne
Orvillers
Vaux
B. de Vaux
le Frétoy
le Tronquoy
Rollot
36
le Ployron
Mortemer
Courcelles
Epayelles
Tricot
129
152
Méry
Cuvilly
Lataule
Belloy
Montgerain
165
Ménévillers
Martin
48
Wacquemoulin
Route
Compiègne


1 C.A.
SOISSONS
Pommiers
Rouen
Mercin-et-Vaux
Pernant
Ambleny
S. Bandry
Vauxbuin
Saconin-et-Breuil
Cutry
Missy-aux-Bois
Ploisy
Berzy
Dommiers
S. Pierre-Aigle
Chaudun
Soucy
Montgobert
Vivières
Vierzy
Longpont
Villers-Helon
Dammard
Billy

Sketch Nº51

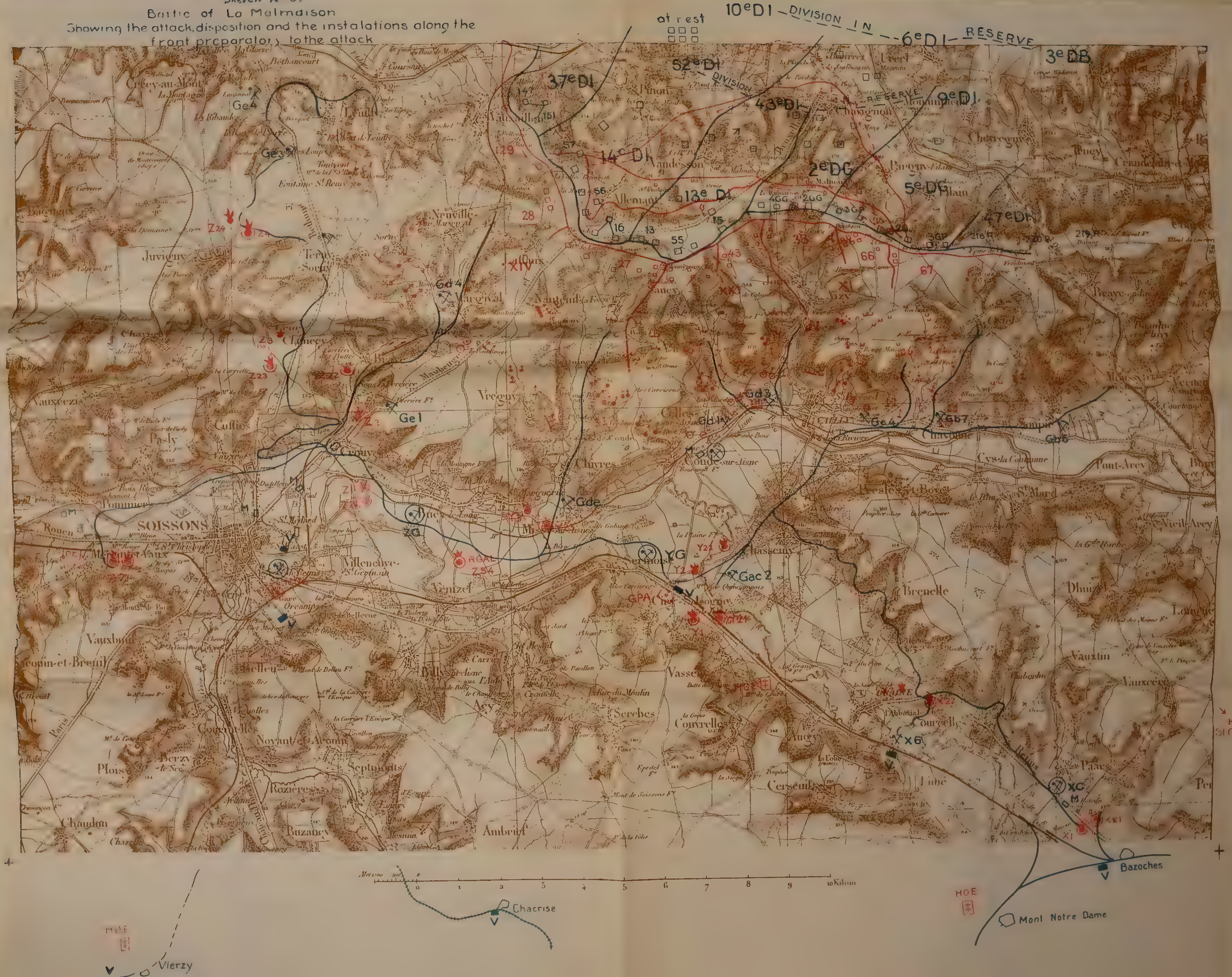
villers
3
Wontiers


Laboissière
Etelfay
Guvillers
MONTDIDIER
Faverolles
la Capelle
Fescamps
Bus
Piennes
Remaugies
le Fundi
Boulogne
Assainvillers
Onvillers
Vaux
B. de Vaux
le Frétoy
le Tronquoy
Rollot
Hainvillers
le Ployron
36
Mortemer
Courcelles
Epayelles
129
152
Méry
Cuvilly
Lataule
Belloy
Maignelay
165
Ménévillers
St Martin-aux-Bois
48
Wacquemoulin
Route
Sorel
d'Abbeville
Forte F.

Sketch N° 52

Battle of La Malmaison

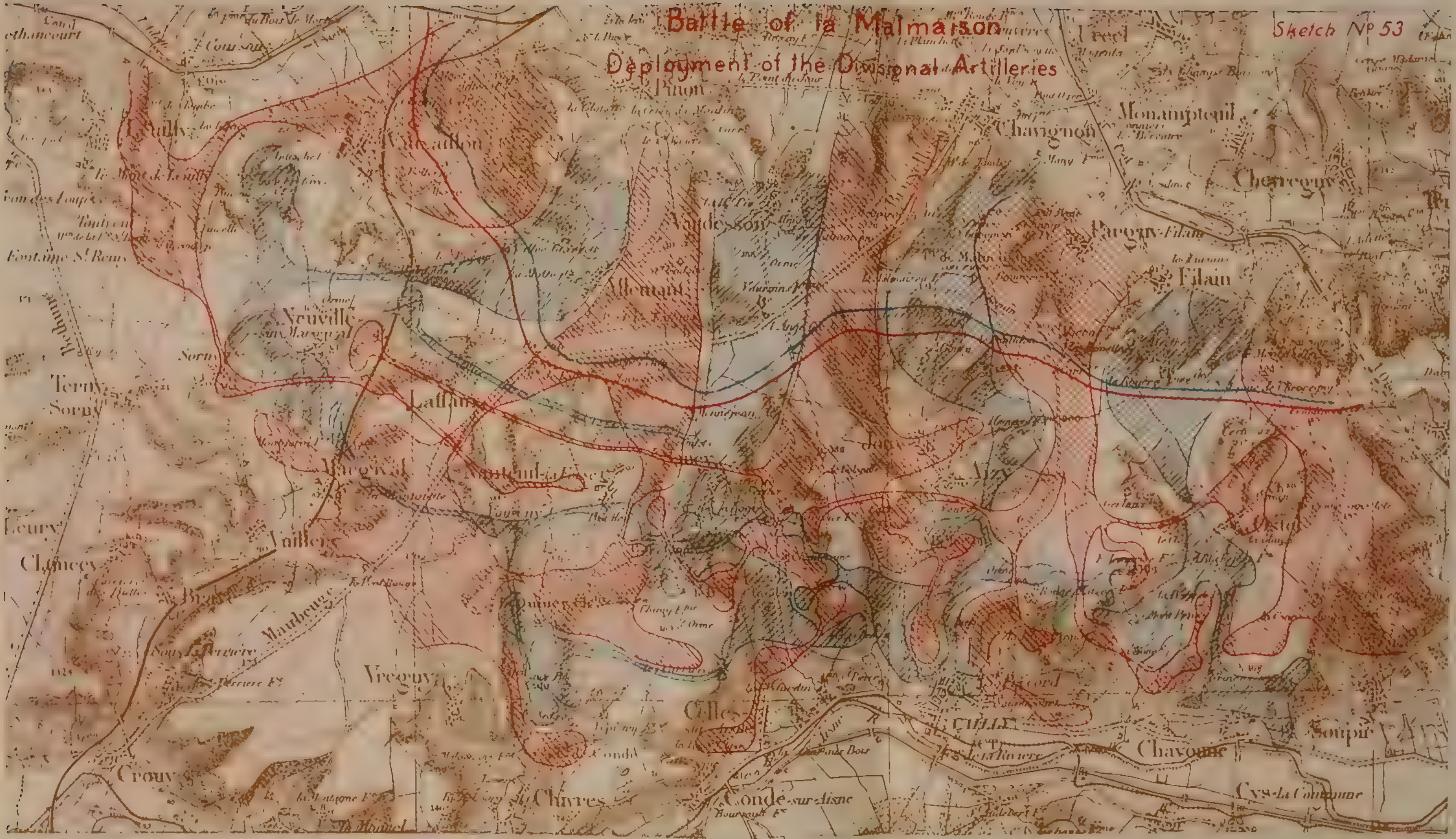
Showing the attack, disposition and the instalations along the front preparatory to the attack



Battle of la Malmaison

Deployment of the Divisional Artilleries

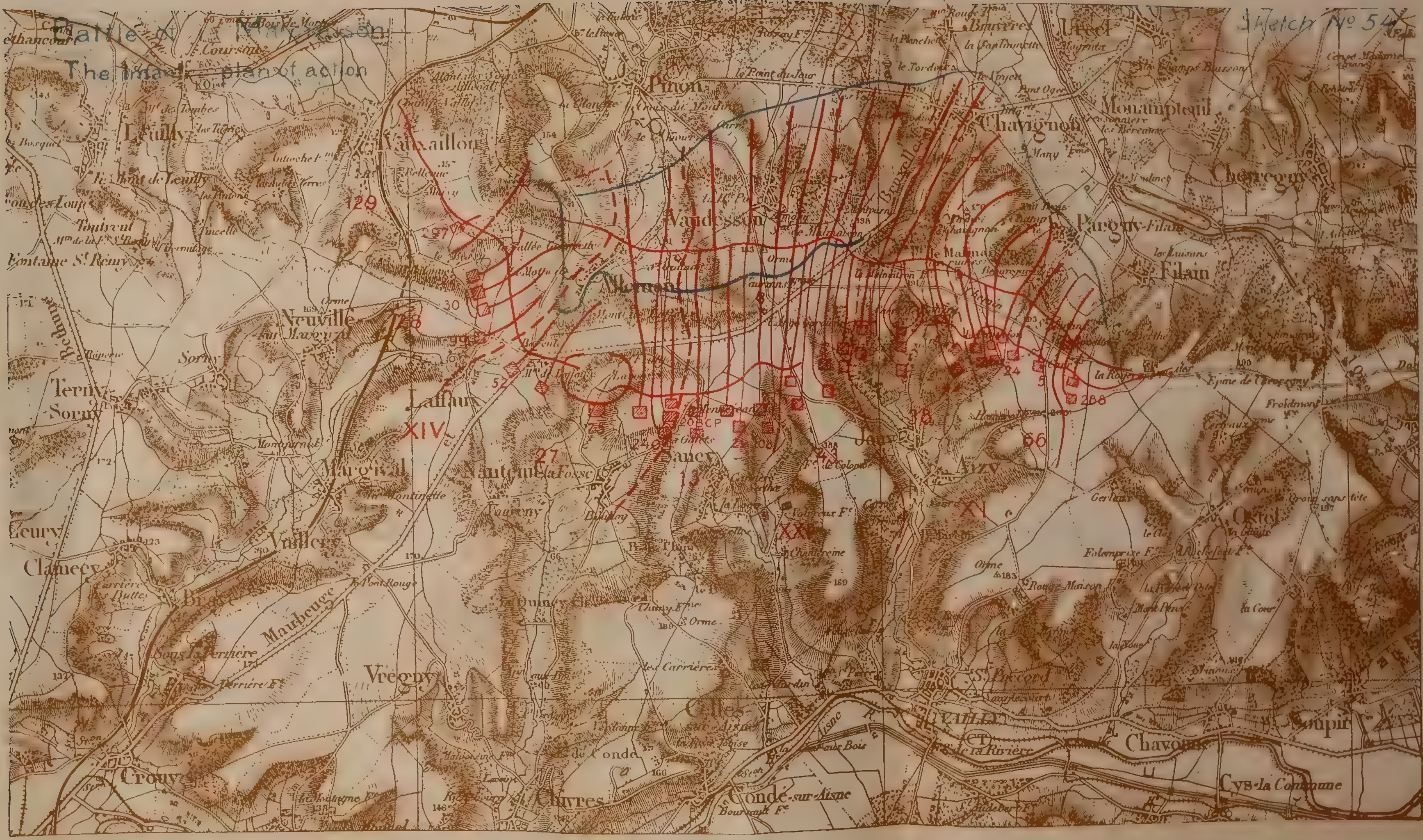
Sketch Nº 53



Battle of Malmaison

The [illegible] plan of action

Sketch No 54



Changes of pos
20 hours
nt d'Origny
Parpeville

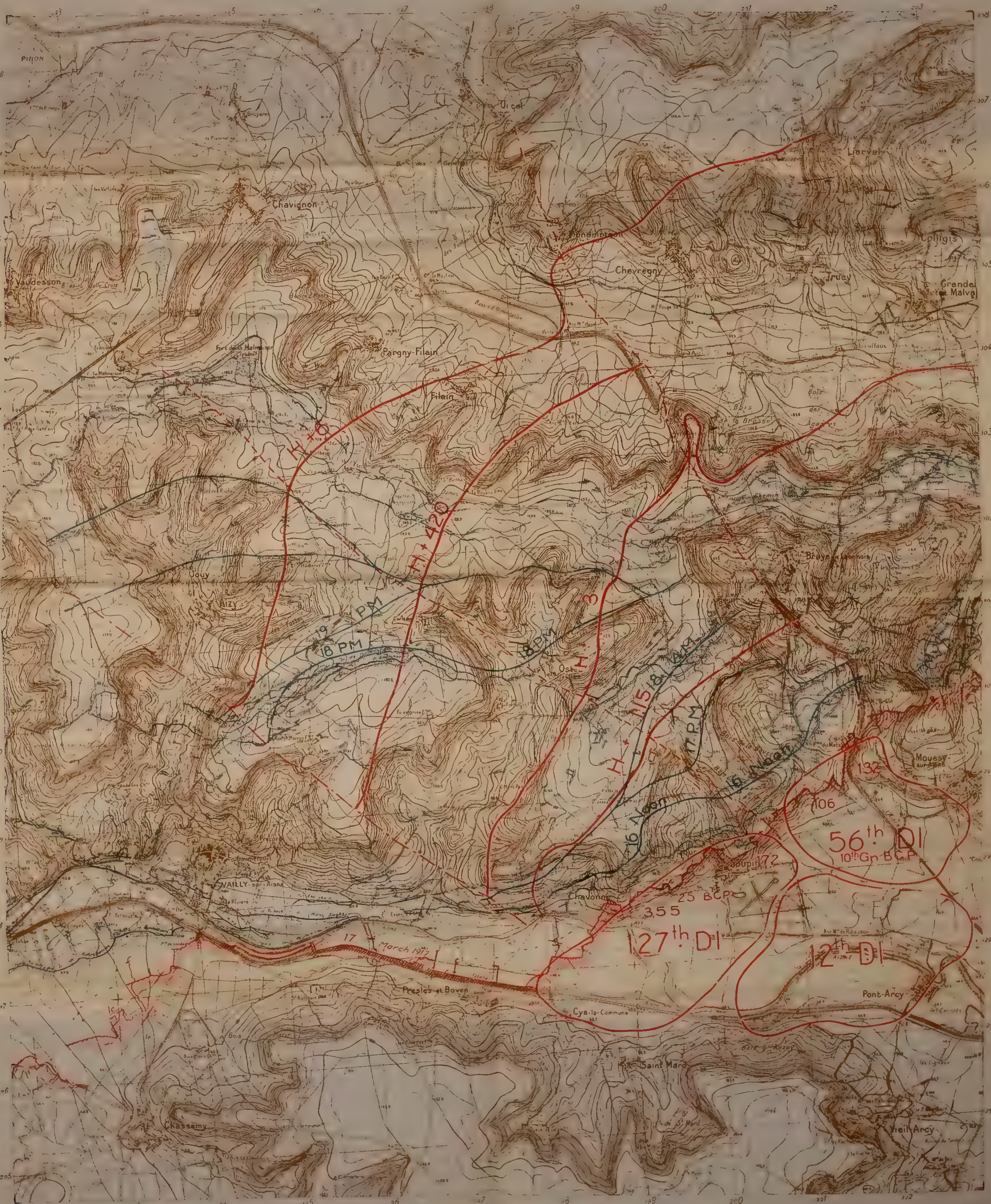
9 ho

Sketch N°56

The VI Corps from April 16th to 21st 1917

LE 6e CORPS DU 16 AU 21 AVRIL 1917

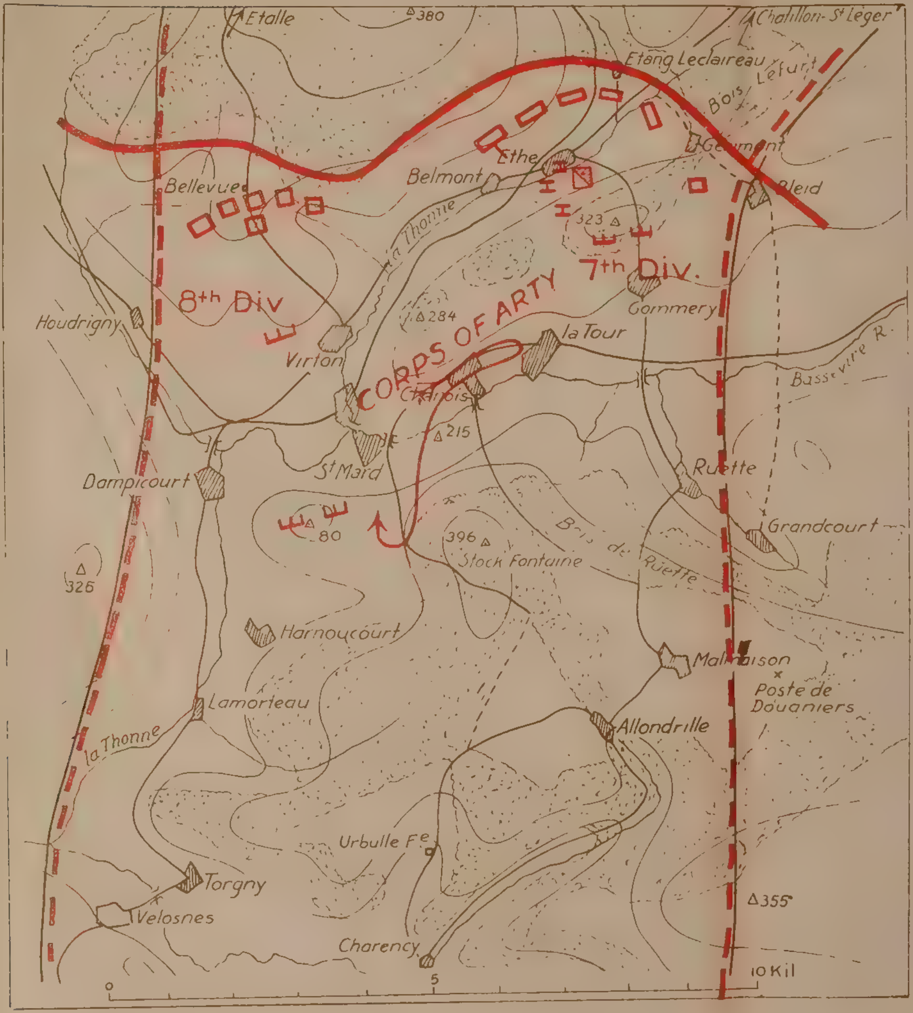
CROQUIS N 56



Les Cotes en Noir sont celles du 80000e et n'ont qu'une valeur approximative

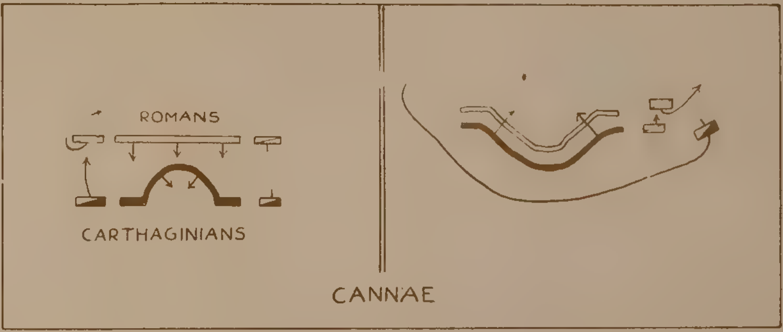
Map Nº 57

IV Corps at Virton (22 Aug. 1914)

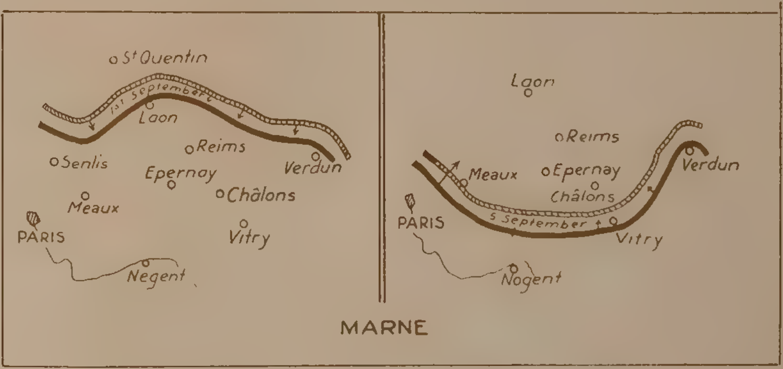


Map N° 58

Cannae and the Marne



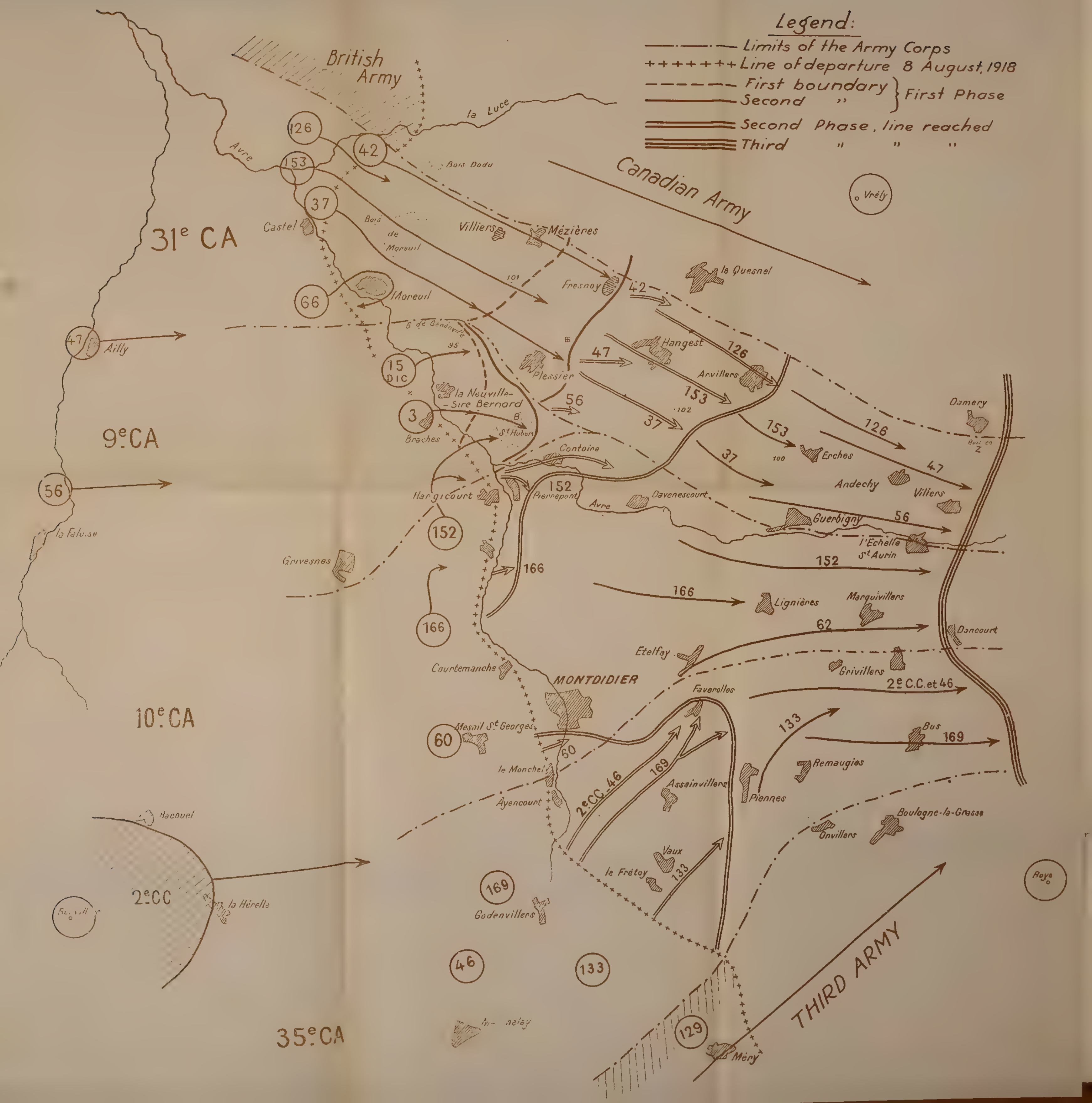
CANNAE



MARNE

Map No 59

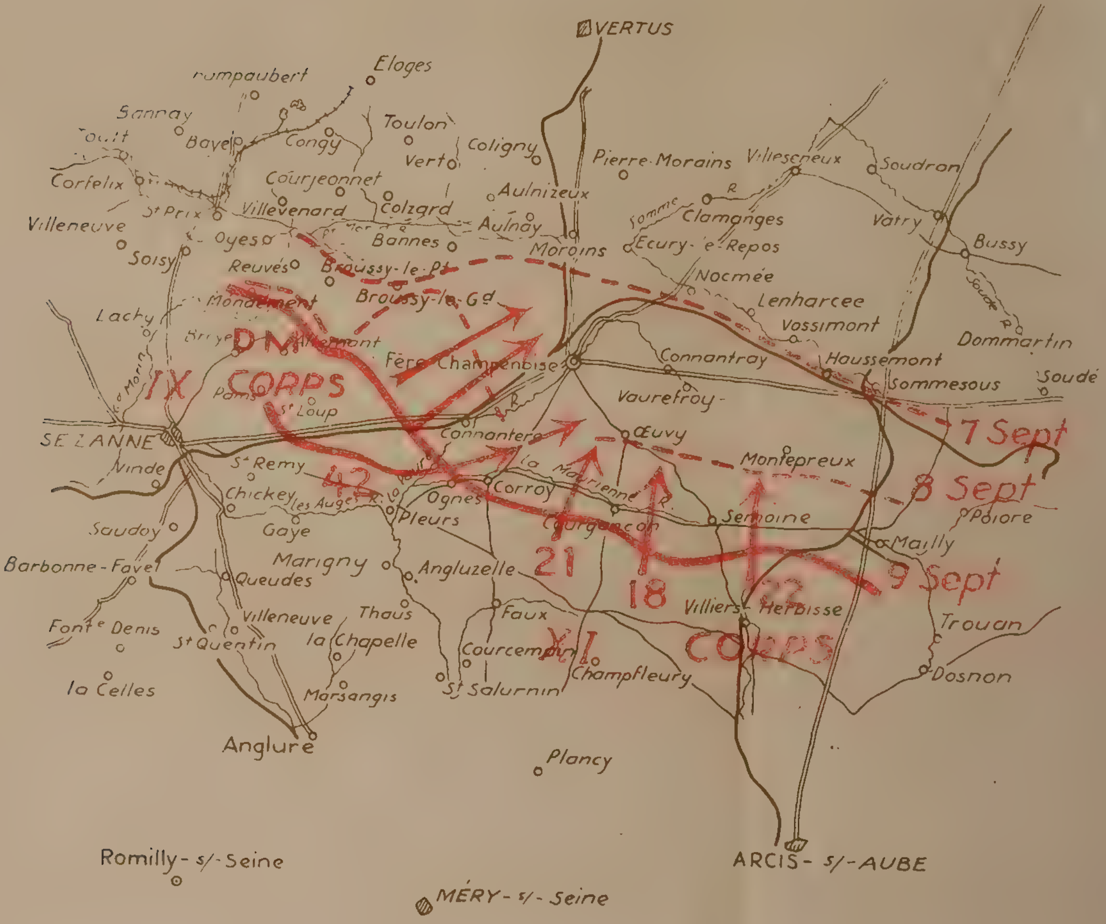
MANEUVERS OF THE FIRST ARMY
8 & 12 August, 1918
Scale 1:80,000



Map No 61

Battle of Fére-Champenoise

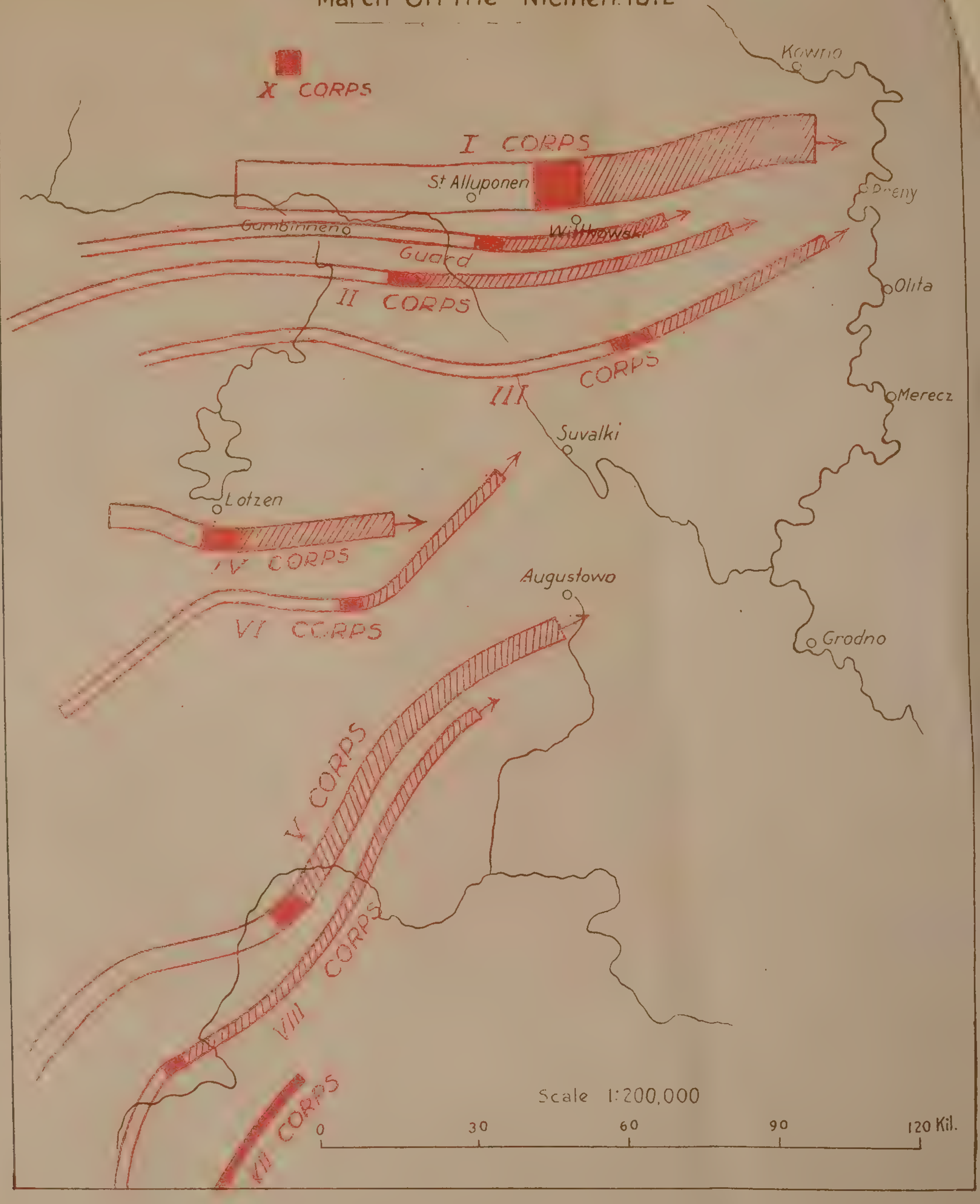
(9 September 1914)



Scale 1:320,000

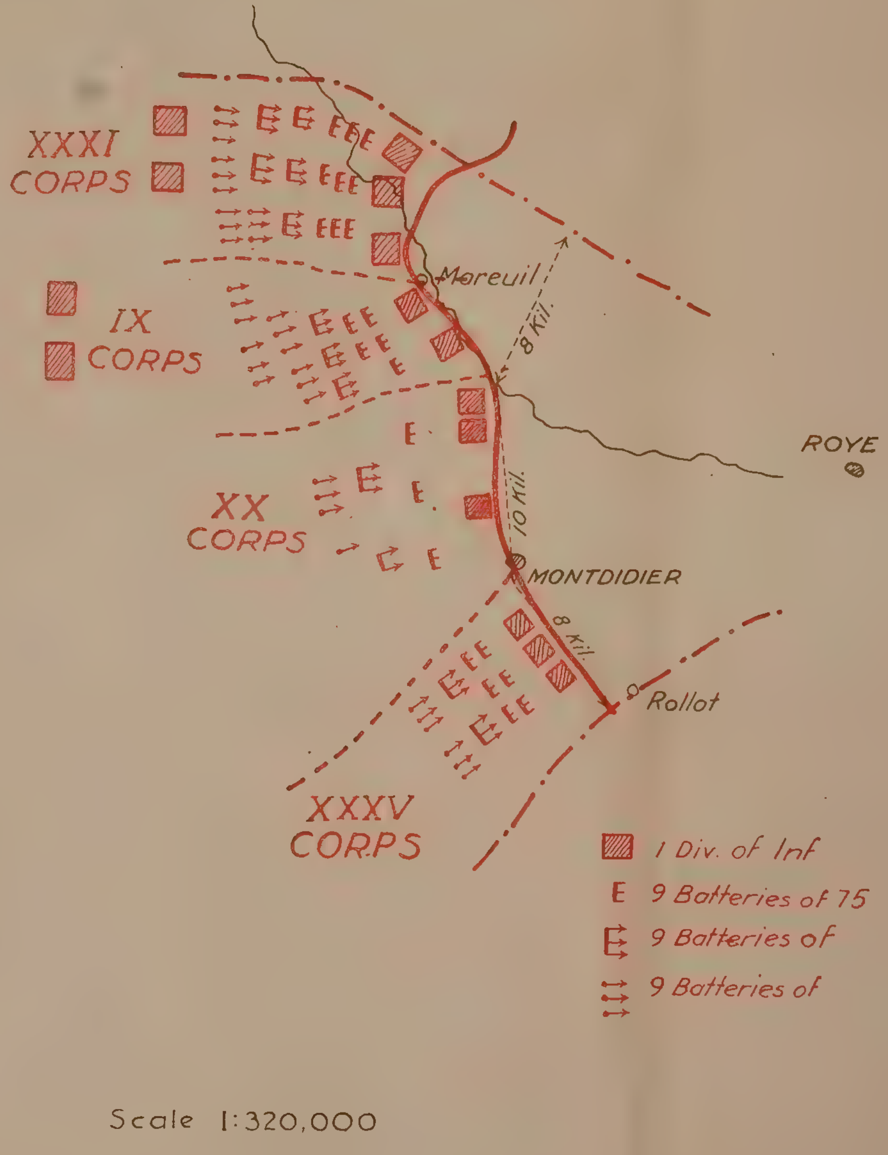
Map No. 62

March on the Niemen 1812



Map No 63

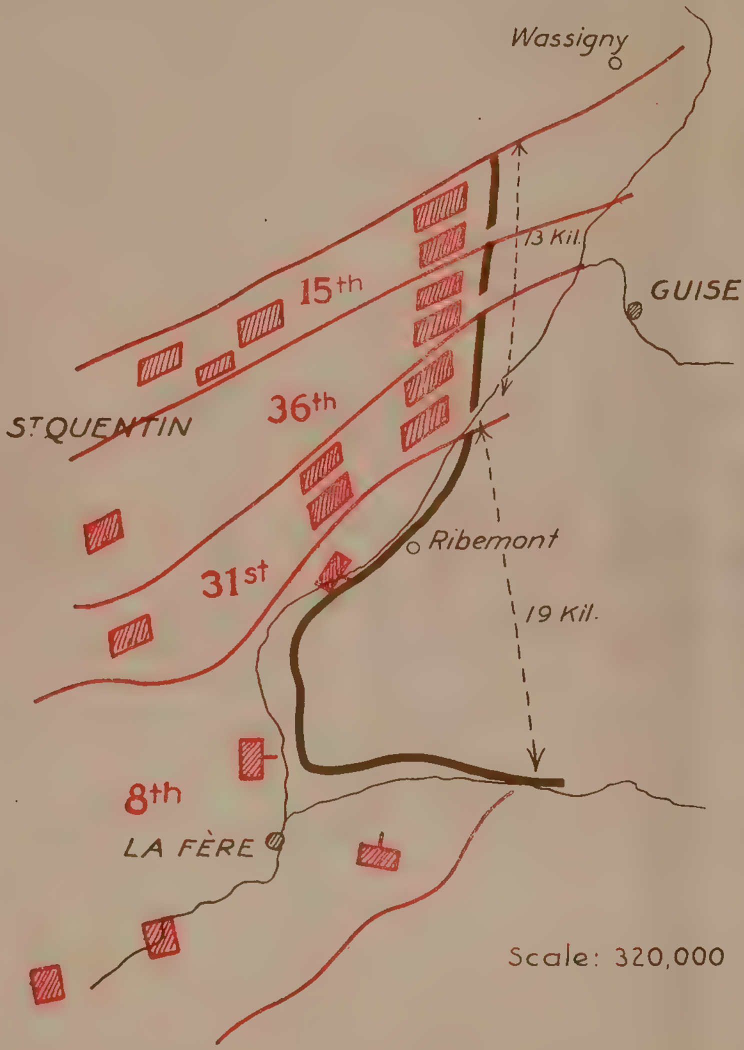
Battle on 8 Aug. 1918
Organization plan of attack



Map No 64

First Phase of the 2d Battle of Guise

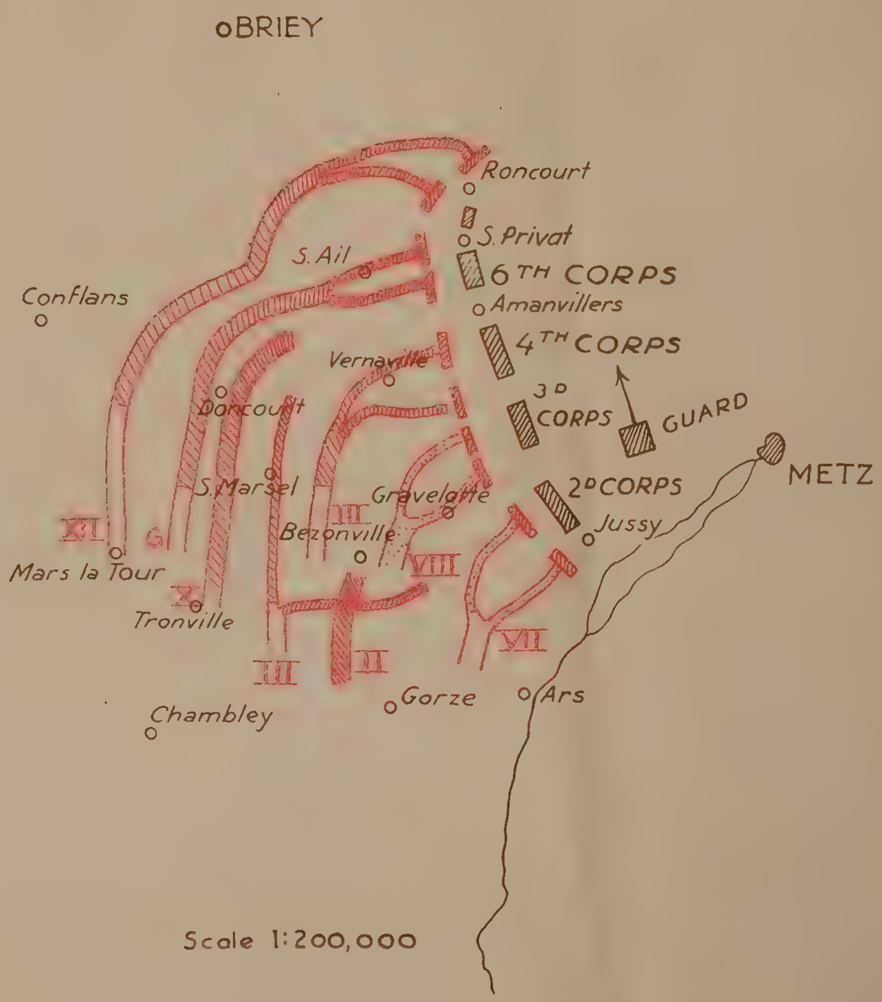
(17 October 1918)



Map No 65

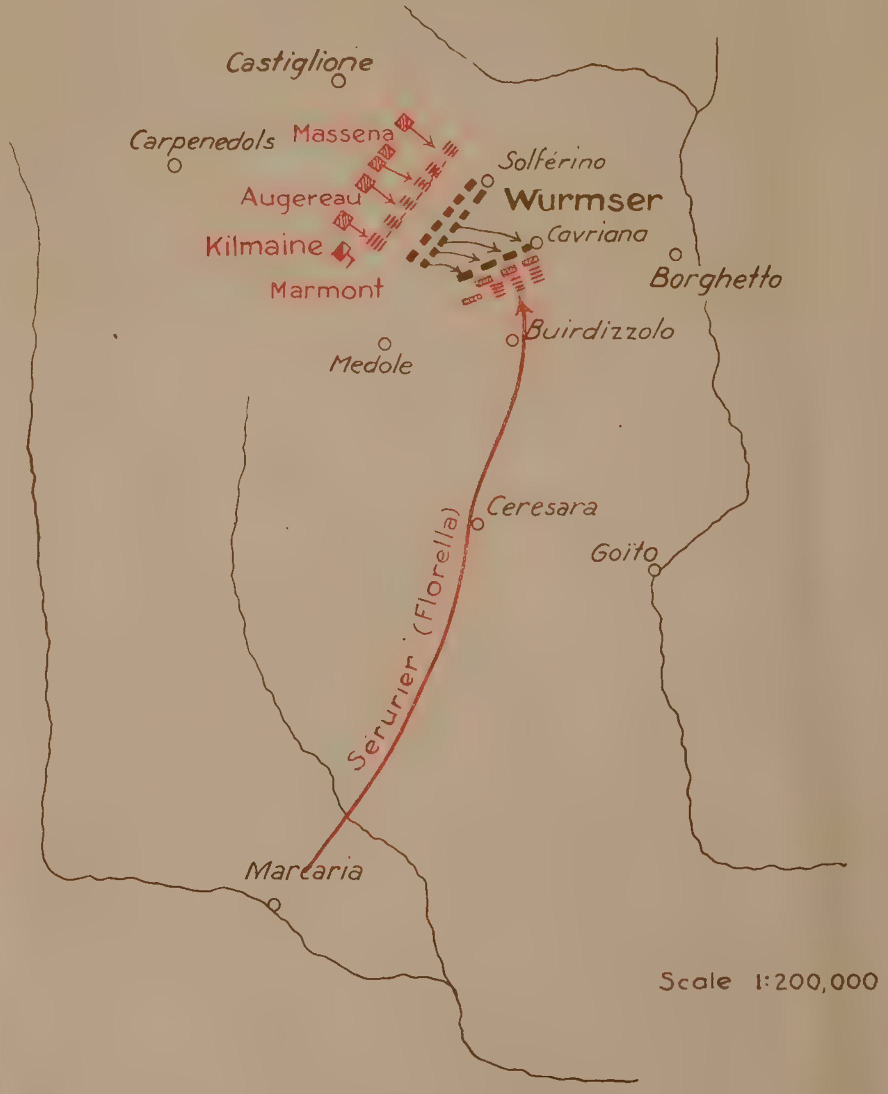
Battle of St. Privat

(18 August 1870)



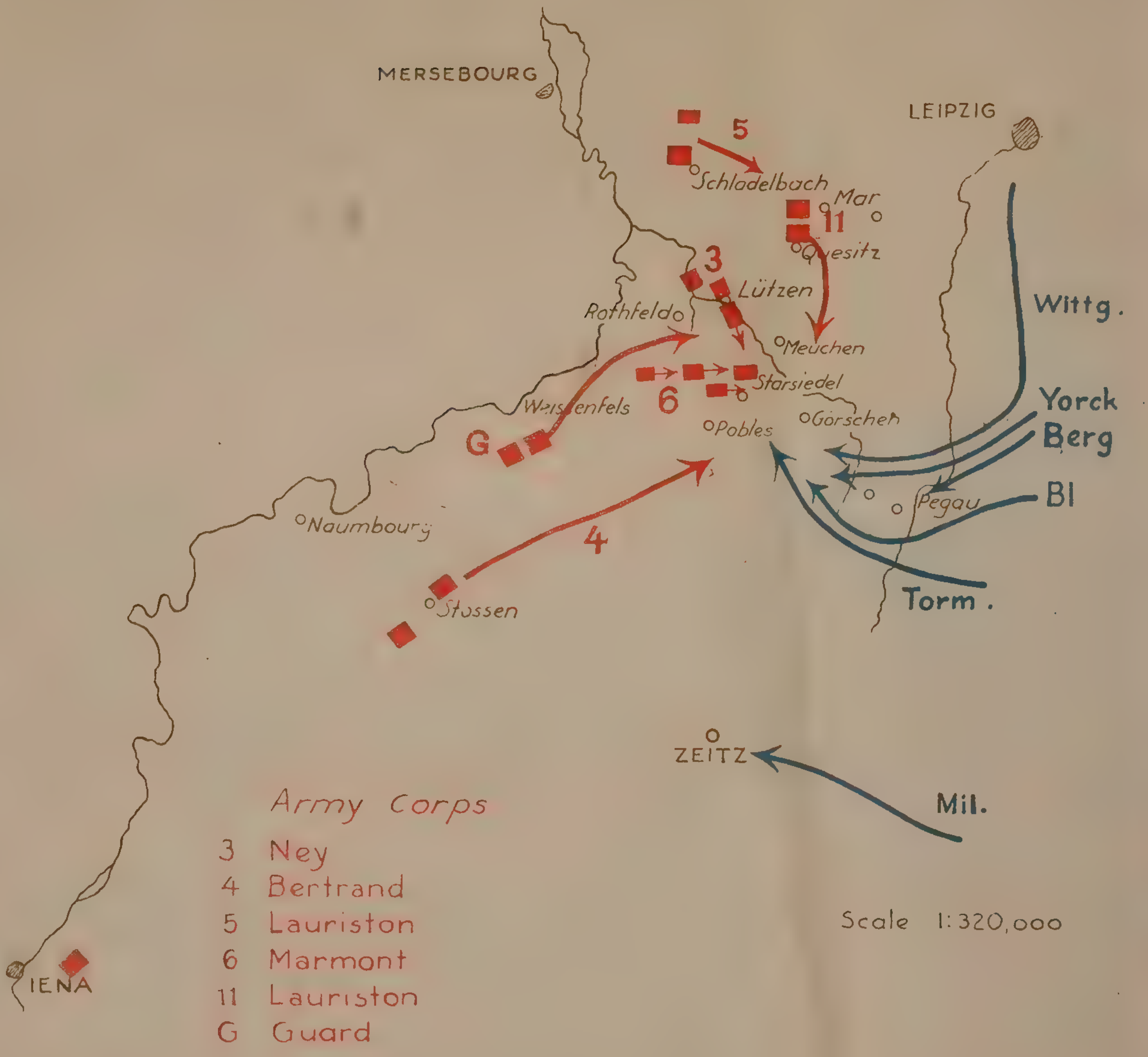
Map No 66

Battle of Castiglione
(5 Aug 1796)



Map No 67

Battle of Lutzen
(2 May -1873)



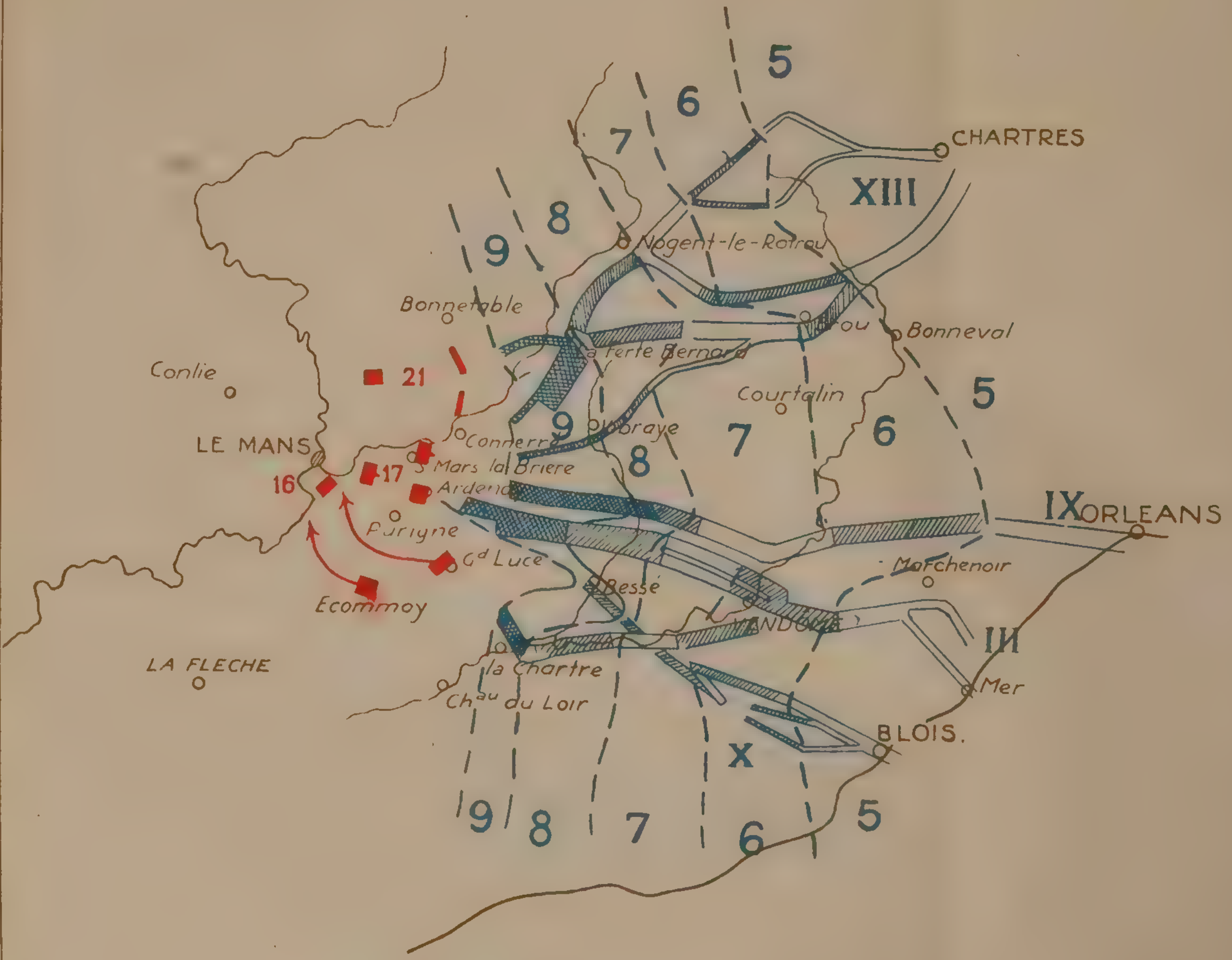
Army Corps

3	Ney
4	Bertrand
5	Lauriston
6	Marmont
11	Lauriston
G	Guard

Scale 1:320,000

Map N° 18

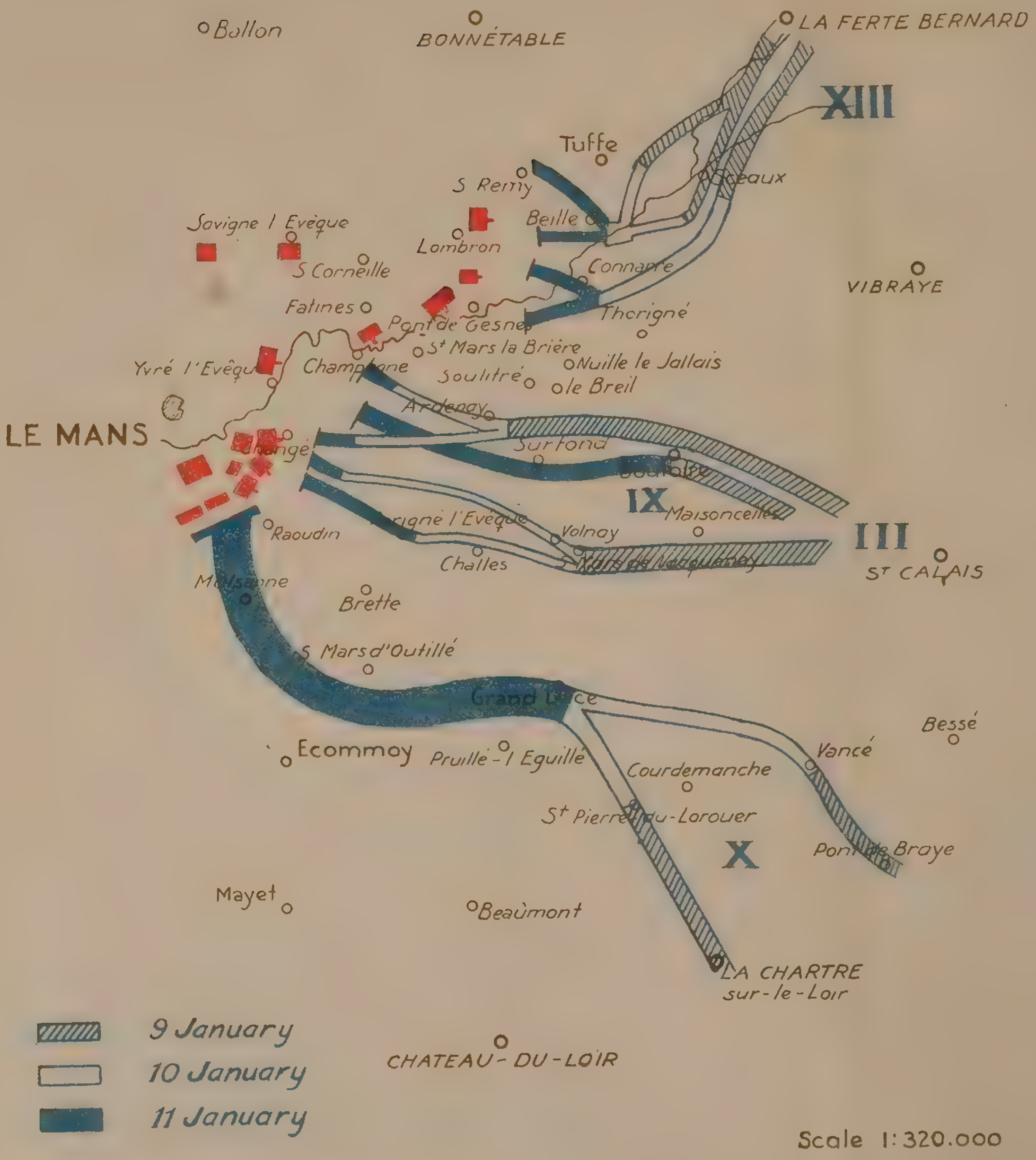
March of the German Second Army on le Mans

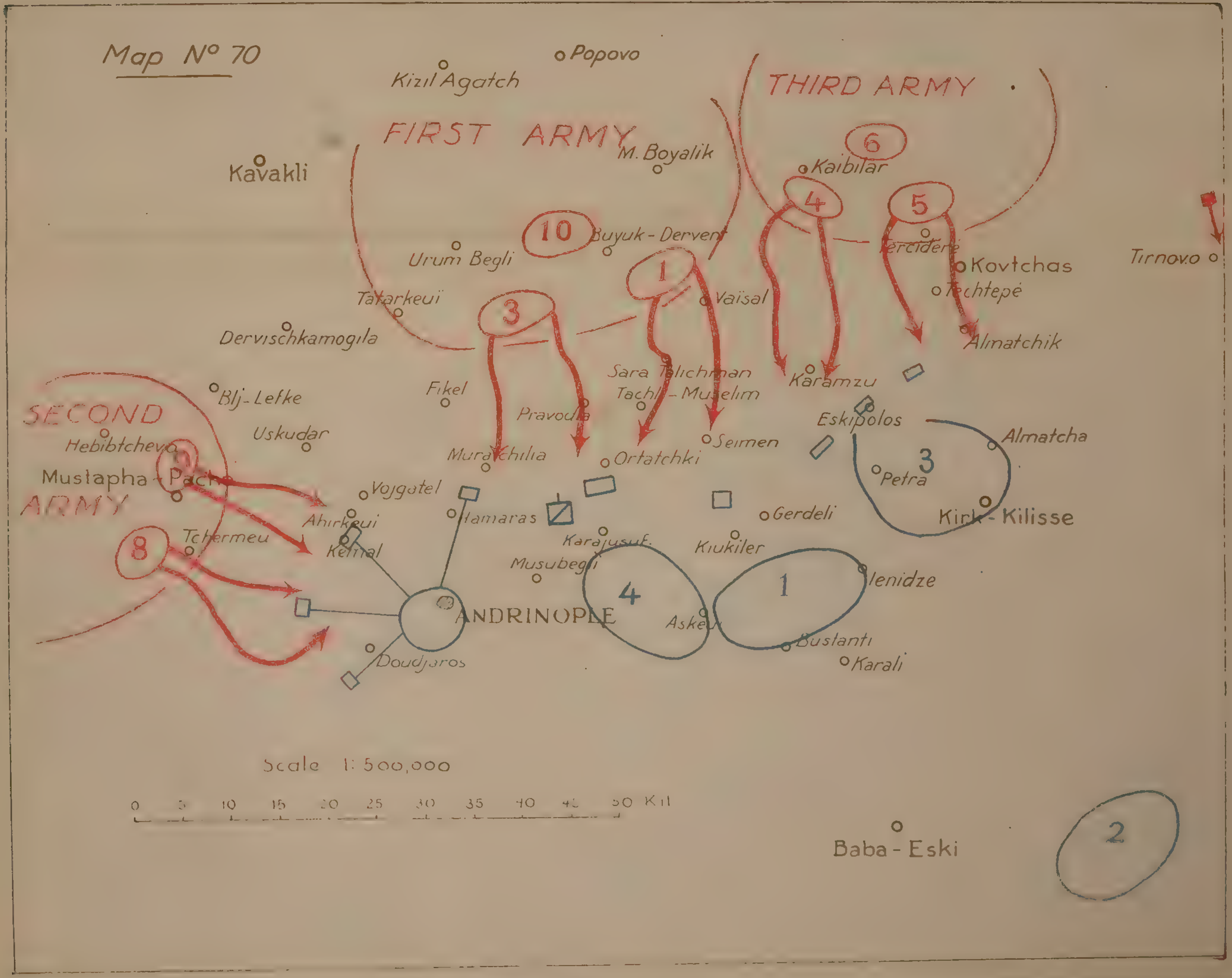


Scale 1:1 000,000

Map N° 69

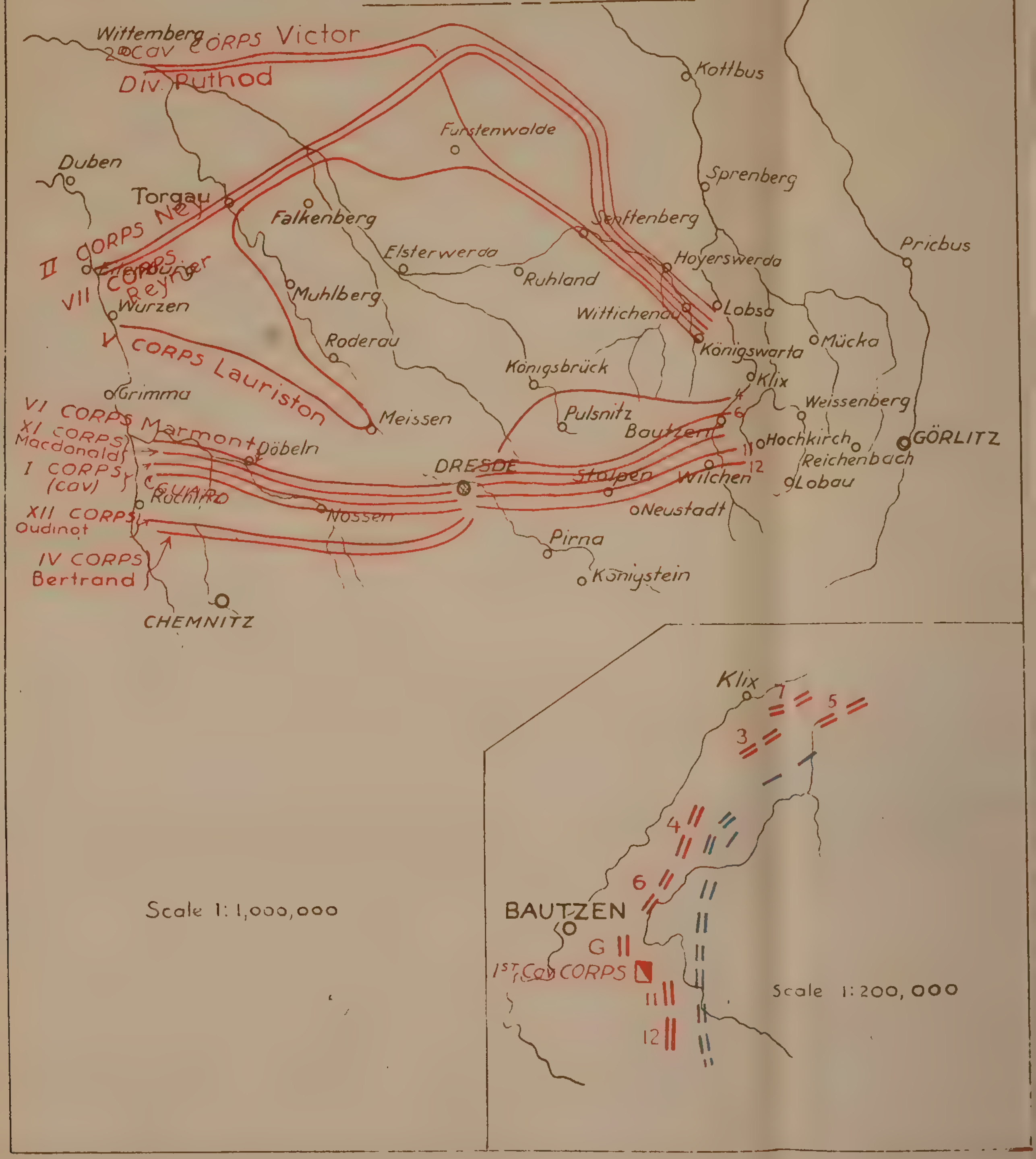
Battle of Mans

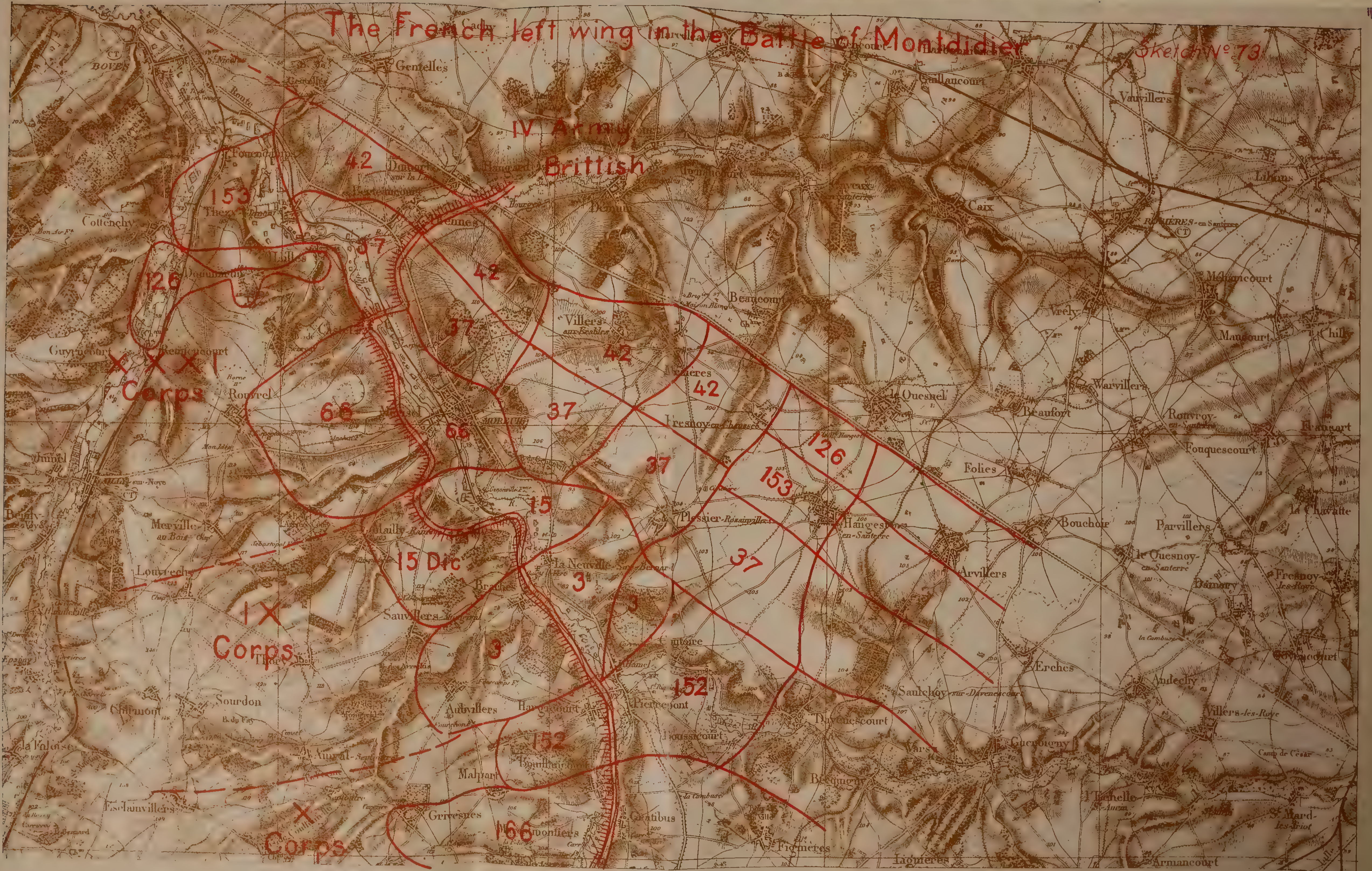



Map Nº 70
Popovo
Kizil Agatch
FIRST ARMY
M. Boyalik
THIRD ARMY
6
Kaibilar
4
5
Kavakli
10
Buyuk - Dervent
Urum Begli
1
Tercidere
Kovtchas
Tirnovo
Tatarkeui
3
Vaisal
Techtepe
Dervischkamogila
Almatchik
Sara Talichman
Karamzu
Fikel
Tachli - Muselim
Blj - Lefke
SECOND
Pravodia
Eskipolos
Almatcha
Uskudar
Seimen
Hebibtchevo
Muratchilia
Ortatchki
3
Mustapha - Pacha
Petra
Vojgatel
ARMY
Ahirkeui
Hamaras
Gerdeli
Kirk - Kilisse
Tchermeu
Karajusuf
Kiukiler
8
Kemal
Musubegli
Ienidze
4
1
ANDRINOPLE
Asker
Buslanti
Doudjaros
Karali
Scale 1: 500,000
0 5 10 15 20 25 30 35 40 45 50 Kil
Baba - Eski
2

Map Nº 71

Battle of Bautzen



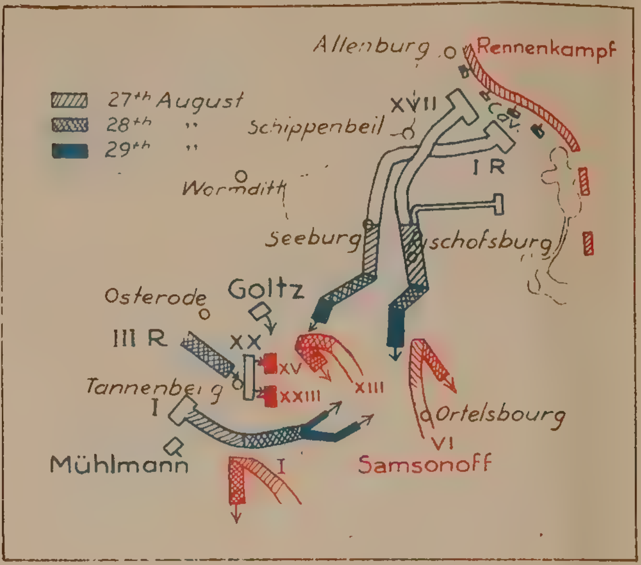


The French left wing in the Battle of Montdidier

Sketch Nº 73

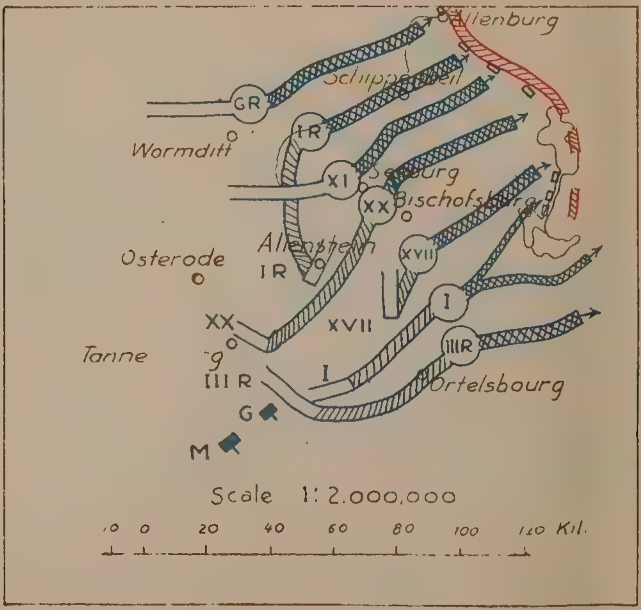
Map Nº 74

Tannenberg (Aug. 1914) 1st phase



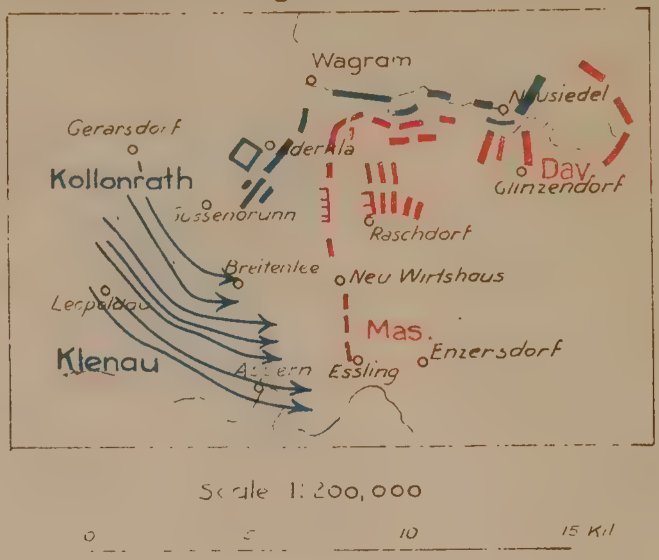
Map Nº 75

Tannenberg (Aug 1914) 2d phase



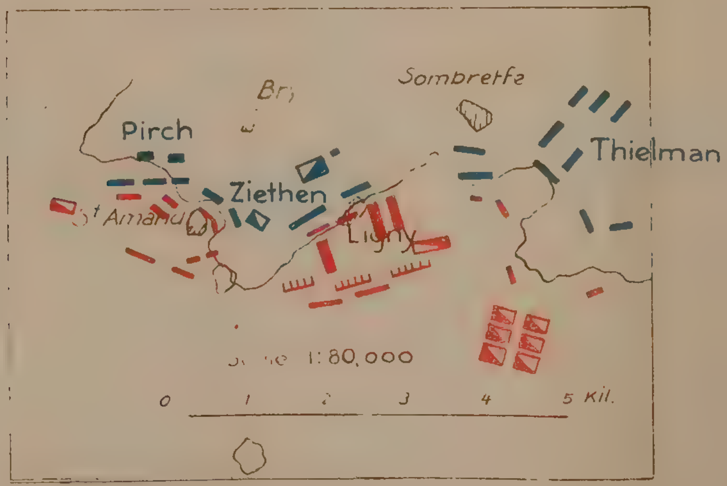
Map Nº 76

Battle of Wagram (6 July 1809)



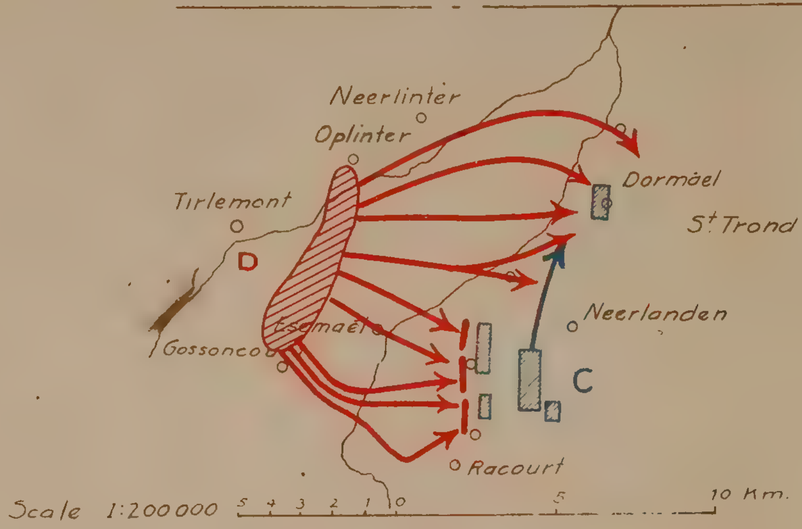
Map Nº 77

Battle of Ligny (16 June 1815)



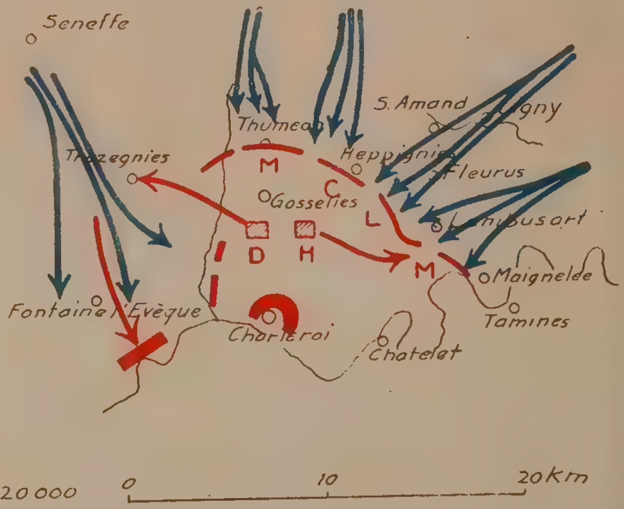
Map No. 78

BATTLE OF NEERWINDEN



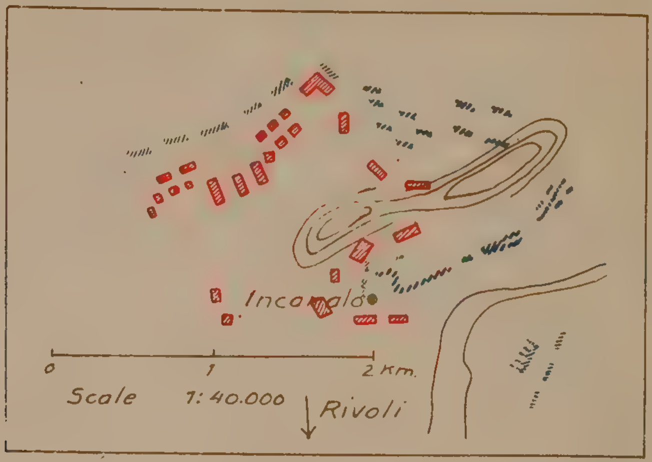
Map No. 79

BATTLE OF FLEURUS



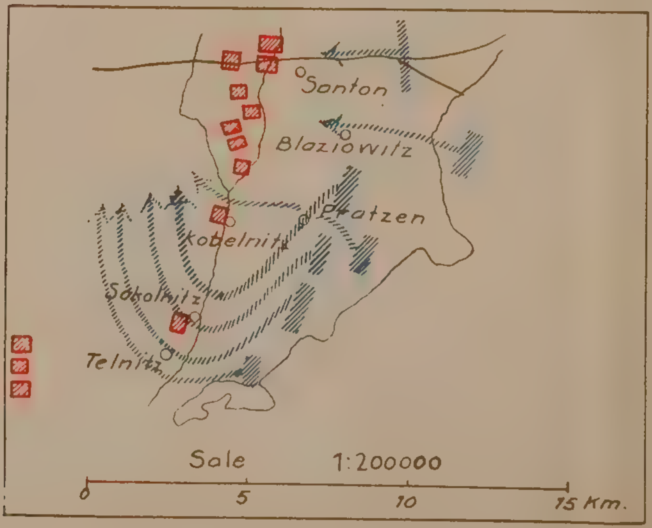
Map No 80

BATTLE OF RIVOLI



Map No. 81

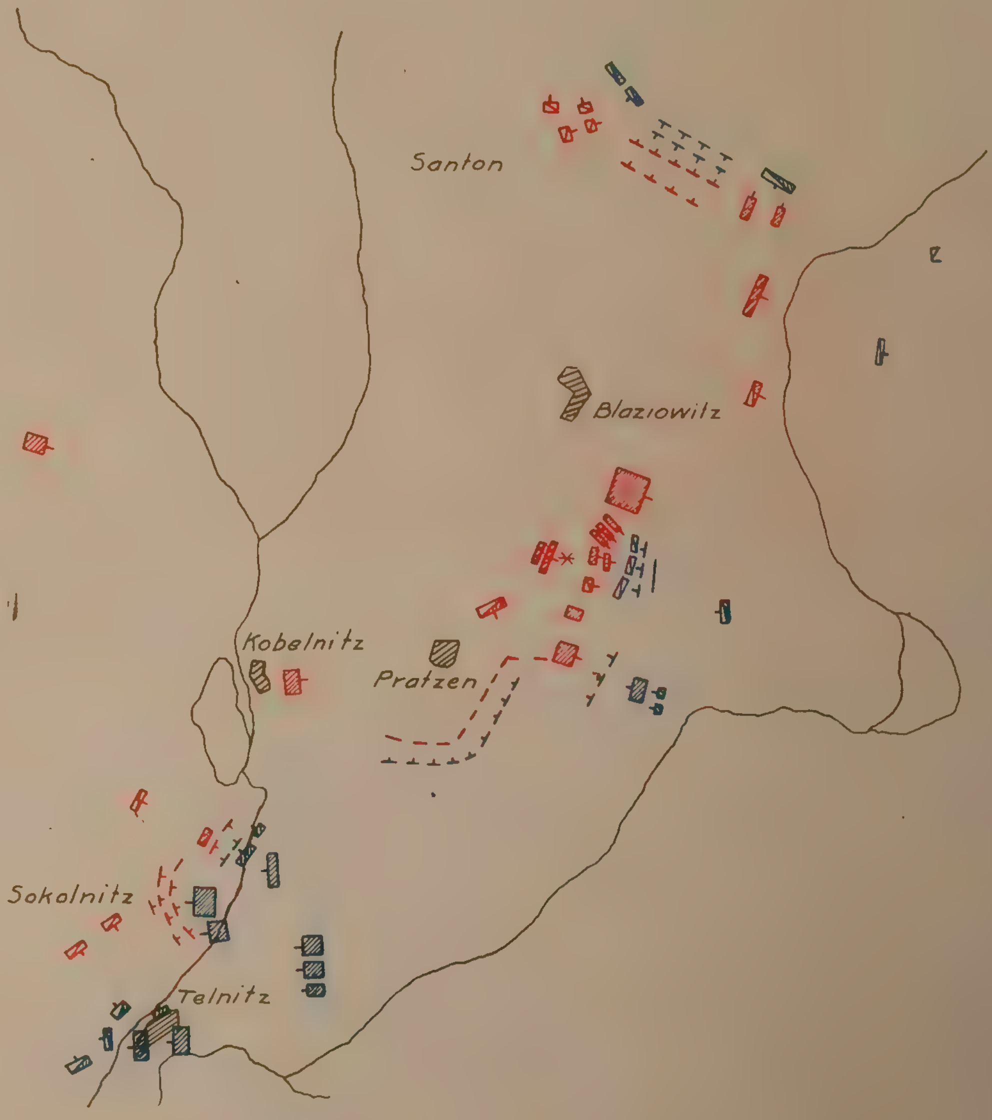
BATTLE OF AUSTERLITZ (December 2, 1805
Plan of attack of the Austro-Russians.



Map No. 82

BATTLE OF AUSTERLITZ (December 2, 1805)

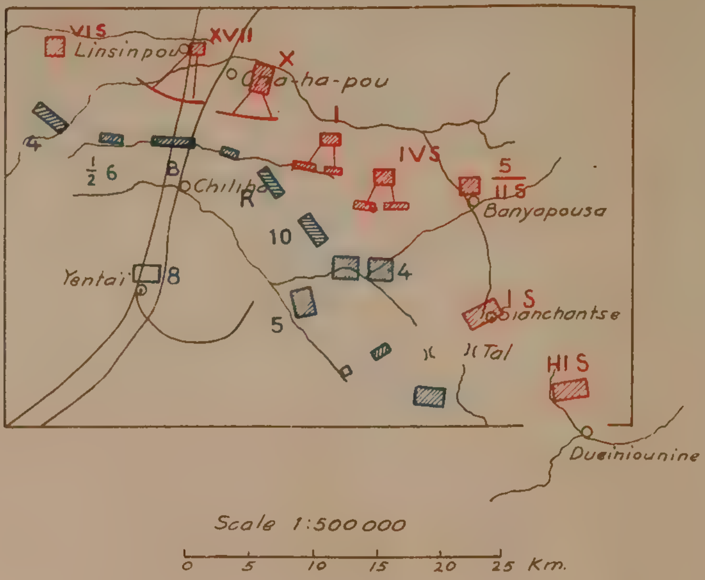
Situation at 1 P.M



Scale 1:80000

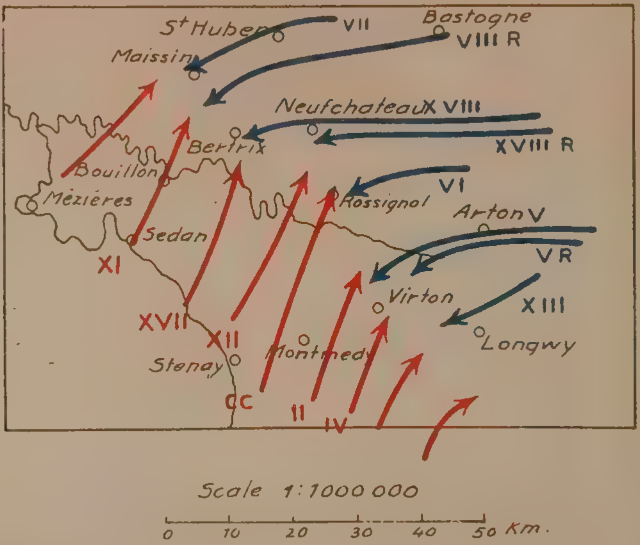
Map No. 83

BATTLE OF SHA-HO ~ Situation, 13. October



Map No. 84

BATTLE OF THE ARDENNES – (August 22, 1914)

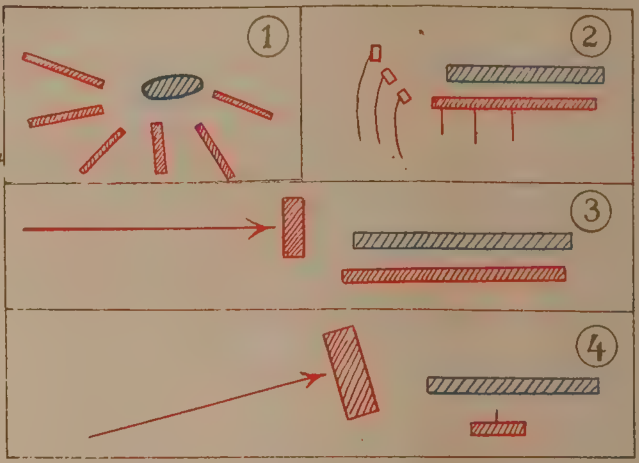


Map Nº 85

Plan from principle types of maneuver

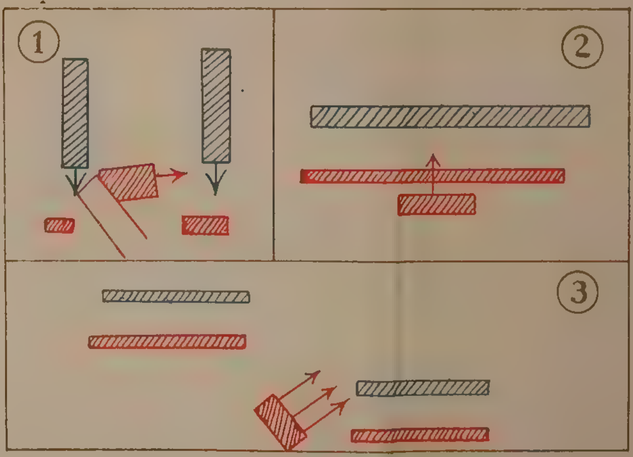
I. Flank maneuvers

1. *Converging Attack*
2. *Invelopment movement*
3. *Combined front and flank attack.*
4. *Flank Attack*



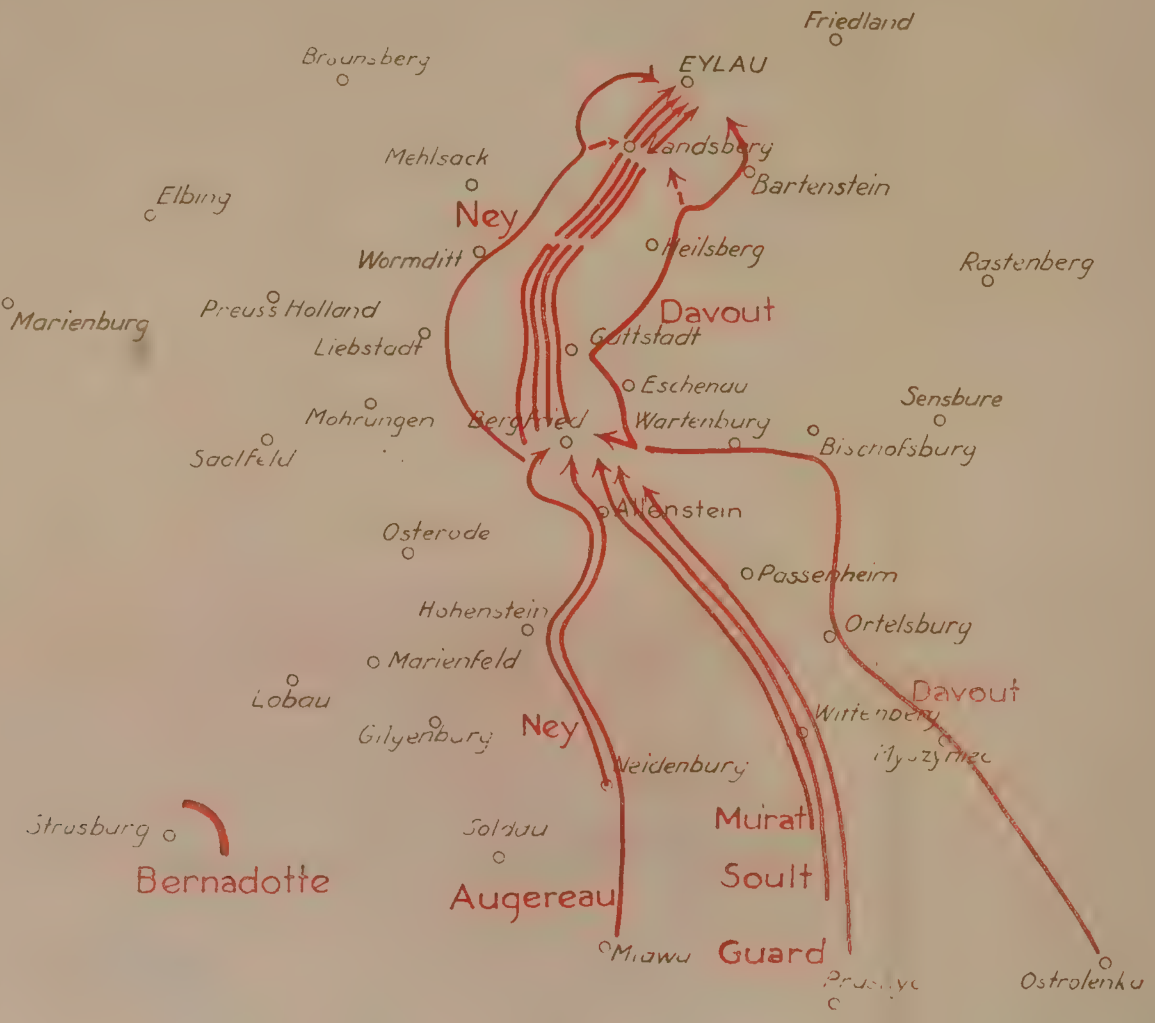
II. Central maneuvers

1. *Maneuver on interior line.*
2. *Penetration*
3. *Actions of Distruction*



Map Nº 86

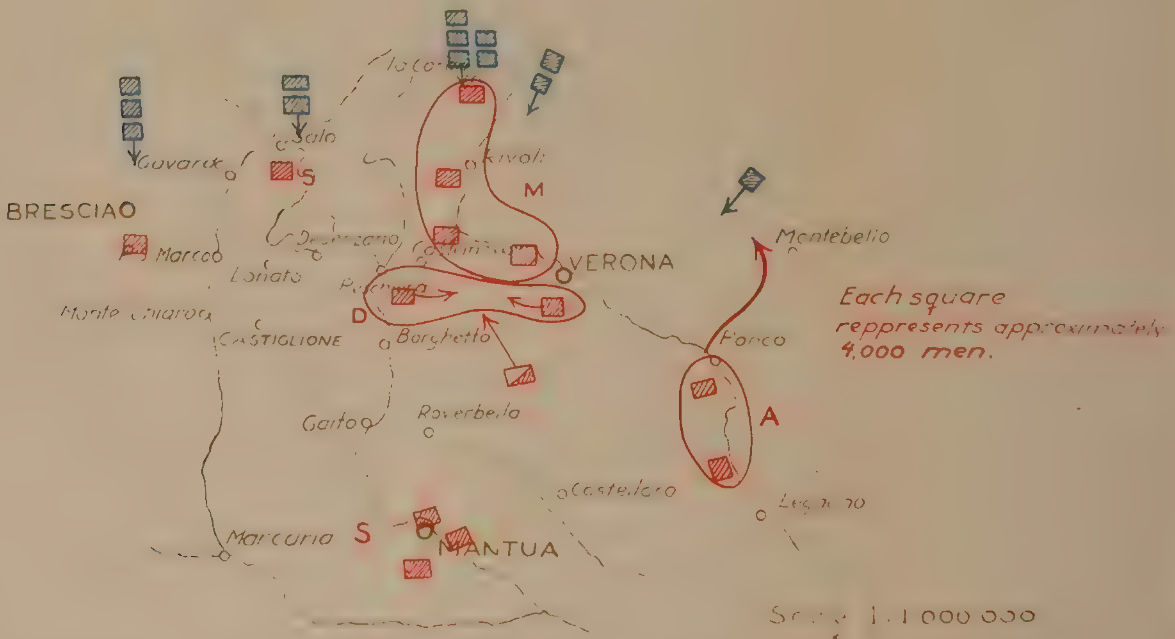
The Maneuver of Eylau



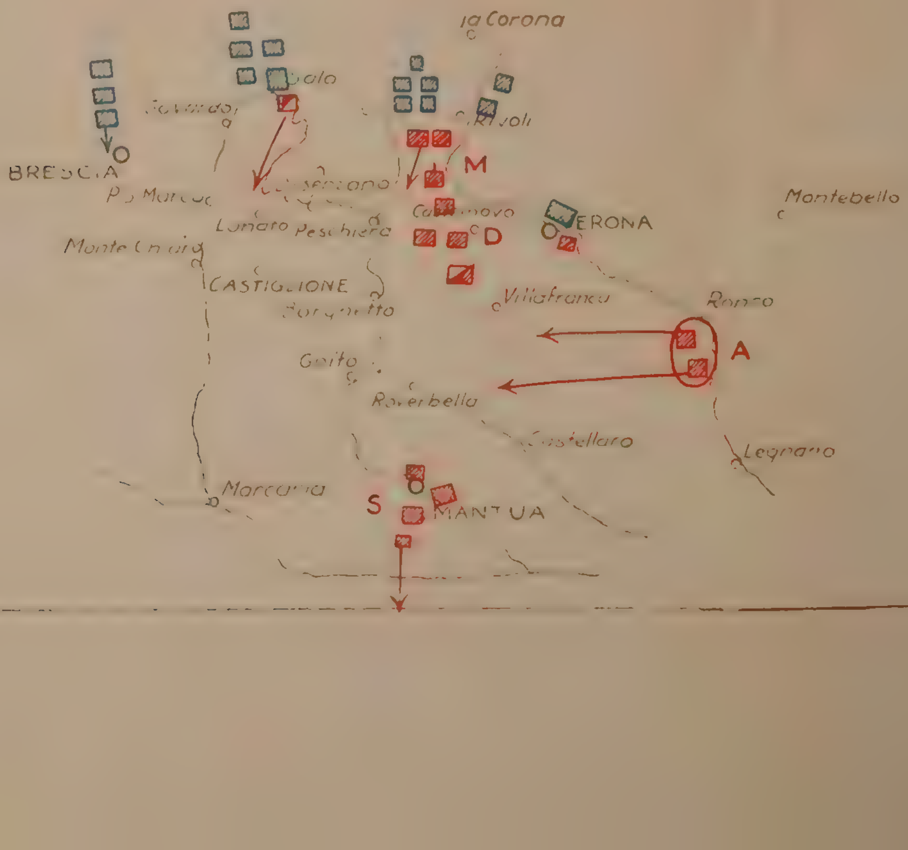
Scale 1: 1 000,000

The Maneuver of Castiglione

Map N° 87. Situation at beginning and Bonaparte's first orders

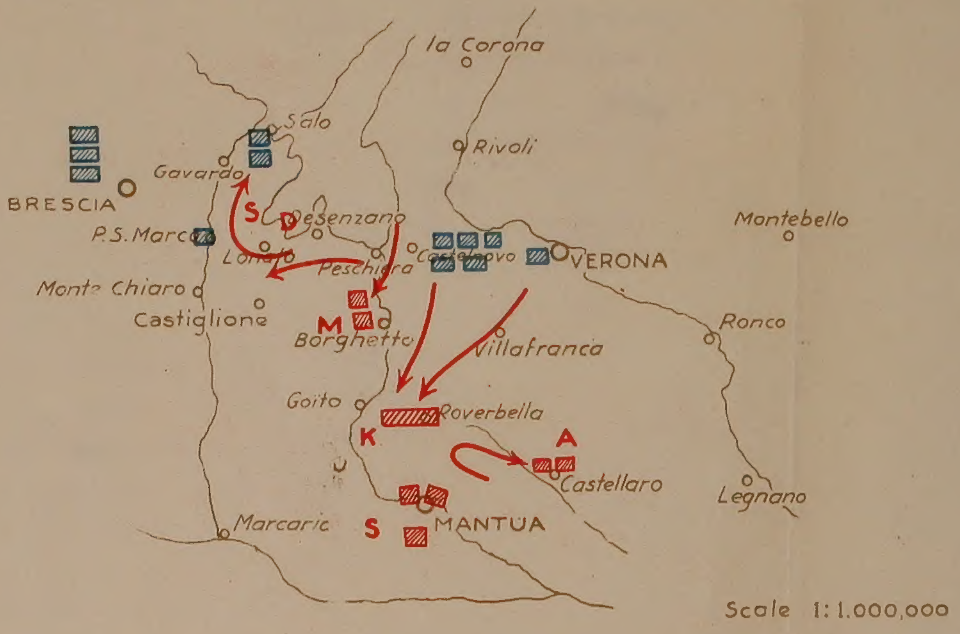


Map N° 88. Situation on afternoon of 29 July

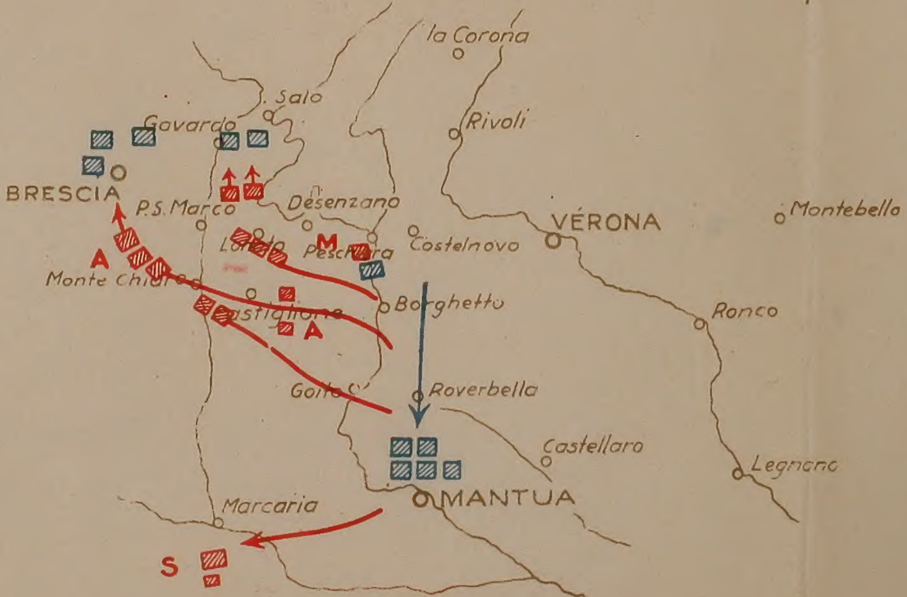


Maneuvers of Castiglione

Map Nº 89 Evening of 30 July.—

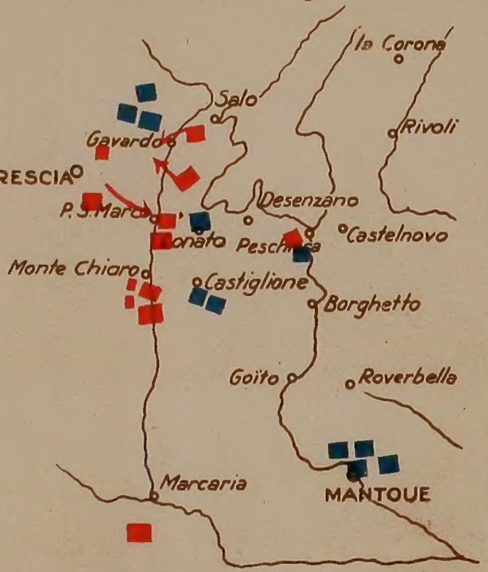


Map Nº 90.— 1st Aug.

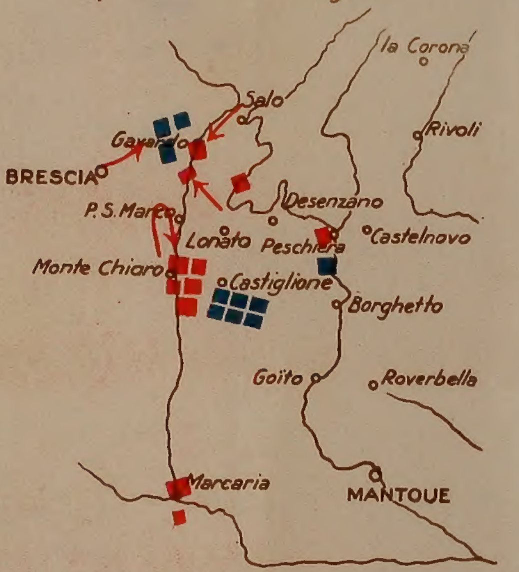


Maneuvers of Castiglione

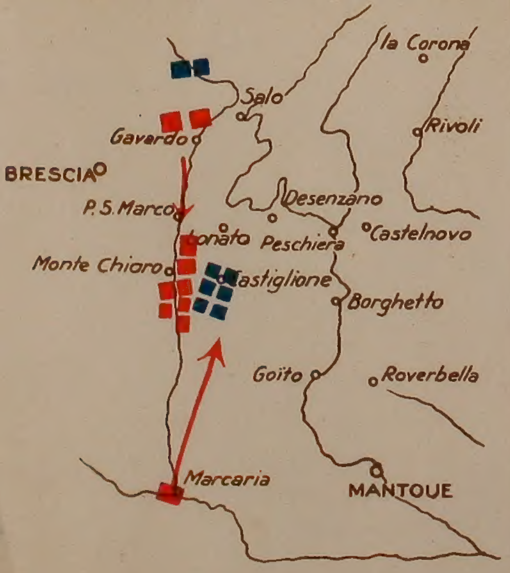
Map Nº 91 – 3 August



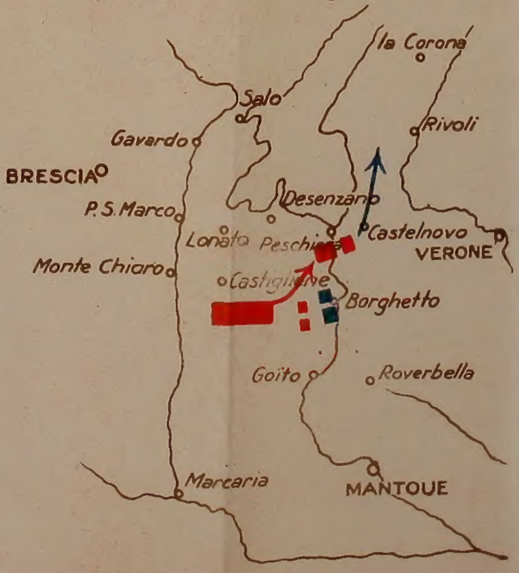
Map Nº 92 - 4 August



Map Nº 93 – 5 August



Map Nº 94 – 6 August



Scale 1:1,000,000